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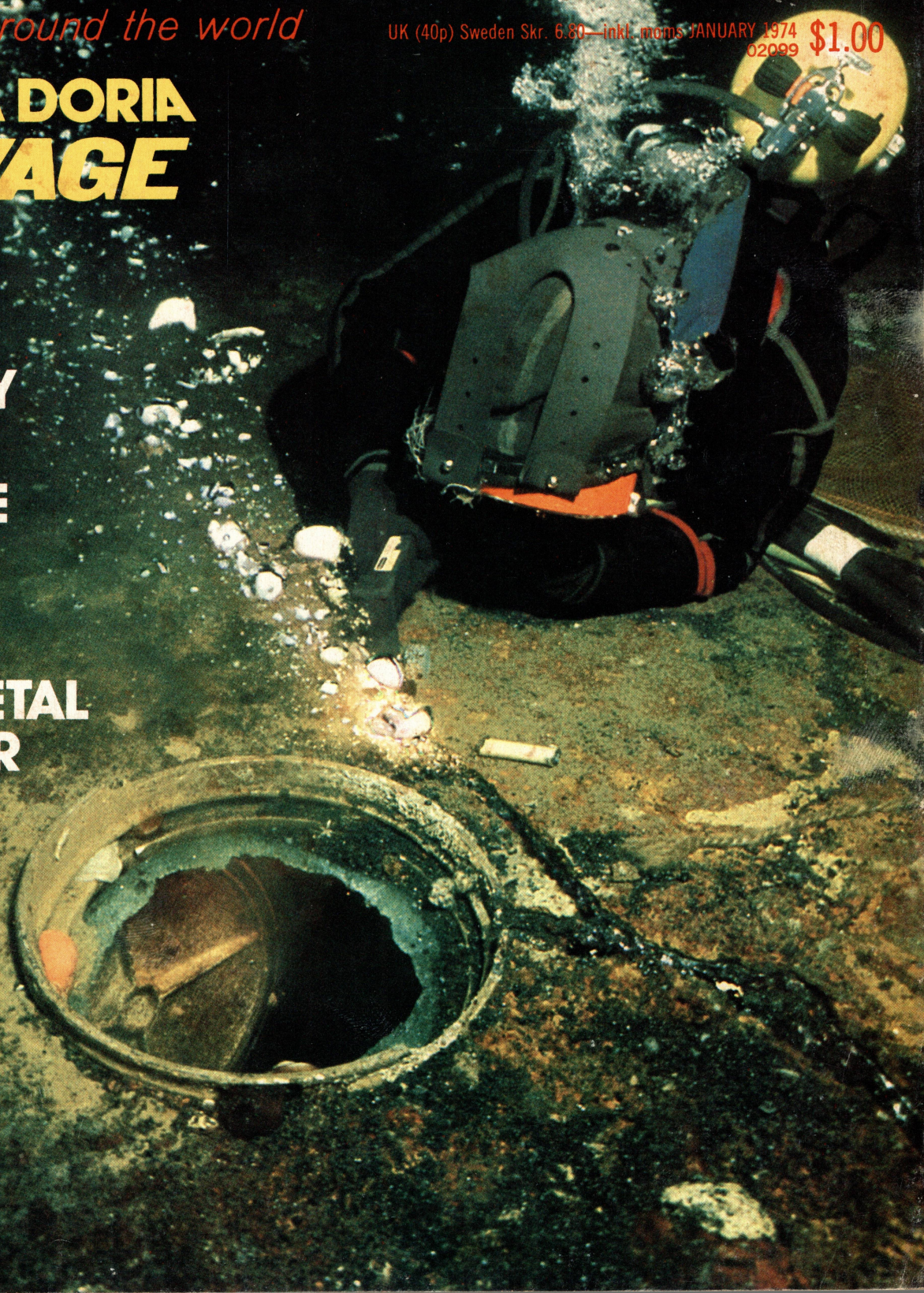
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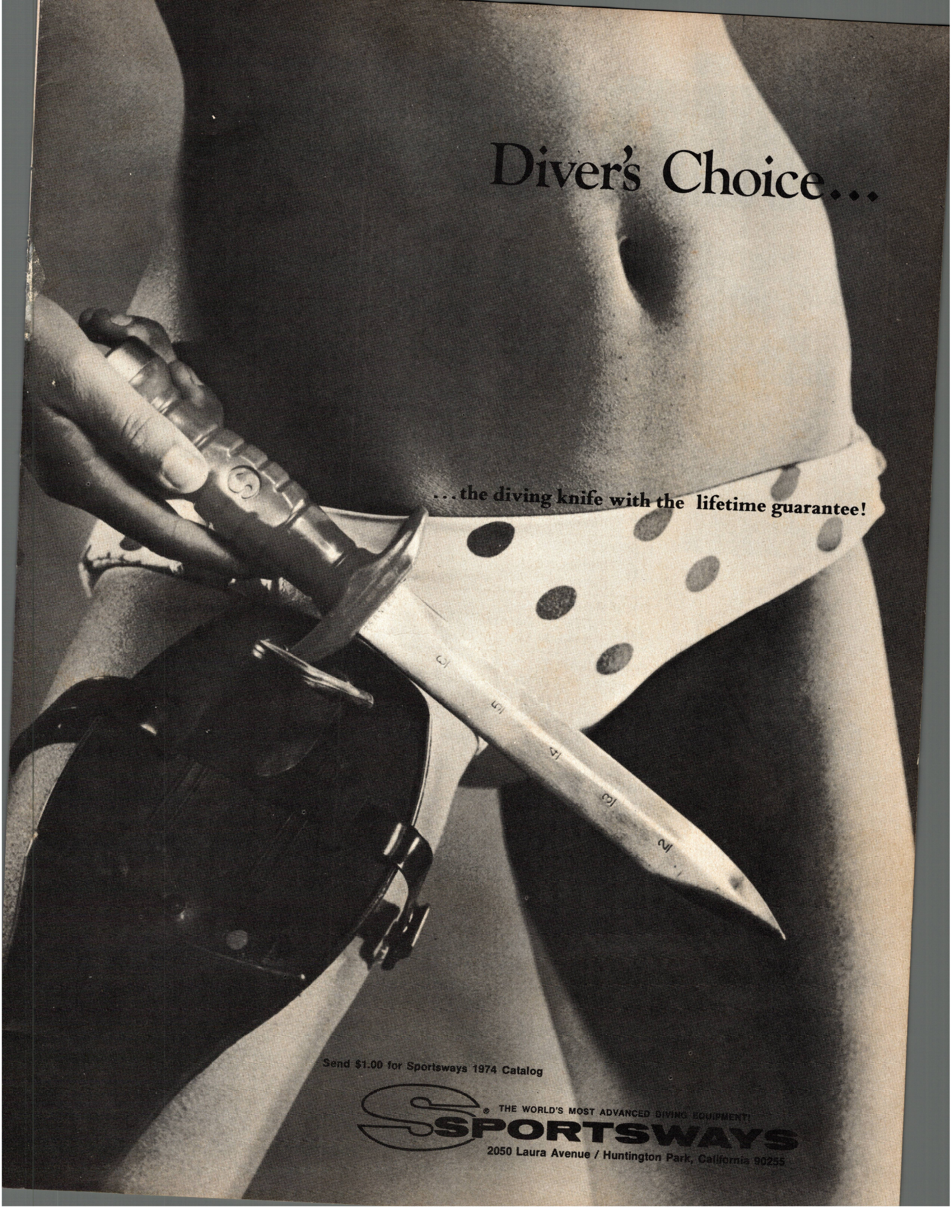
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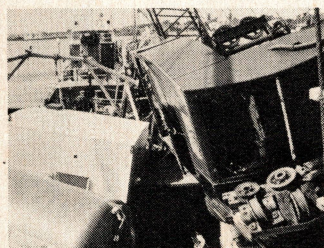
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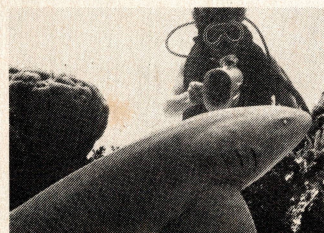
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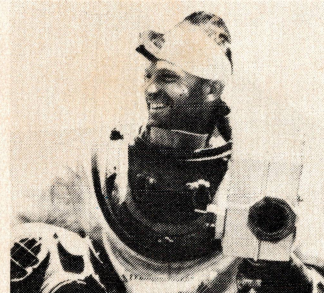
VOLUME TWENTY-THREE NUMBER ONE



44/Mother's Control Damaged



58/Diver's Hideaway



26/ Dangerous Business

Cover — Don Rodocker of Saturation Systems, Inc. cuts through the foyer doors leading into the treasure rooms of the Andrea Doria at a depth of 160 feet while saturated. Photographer McKenney used high speed Ektachrome film in his Nikons camera with a 21mm Seacor lens and a Subsea strobe.

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Looking for liquid blue under frozen white swathed in rigid black

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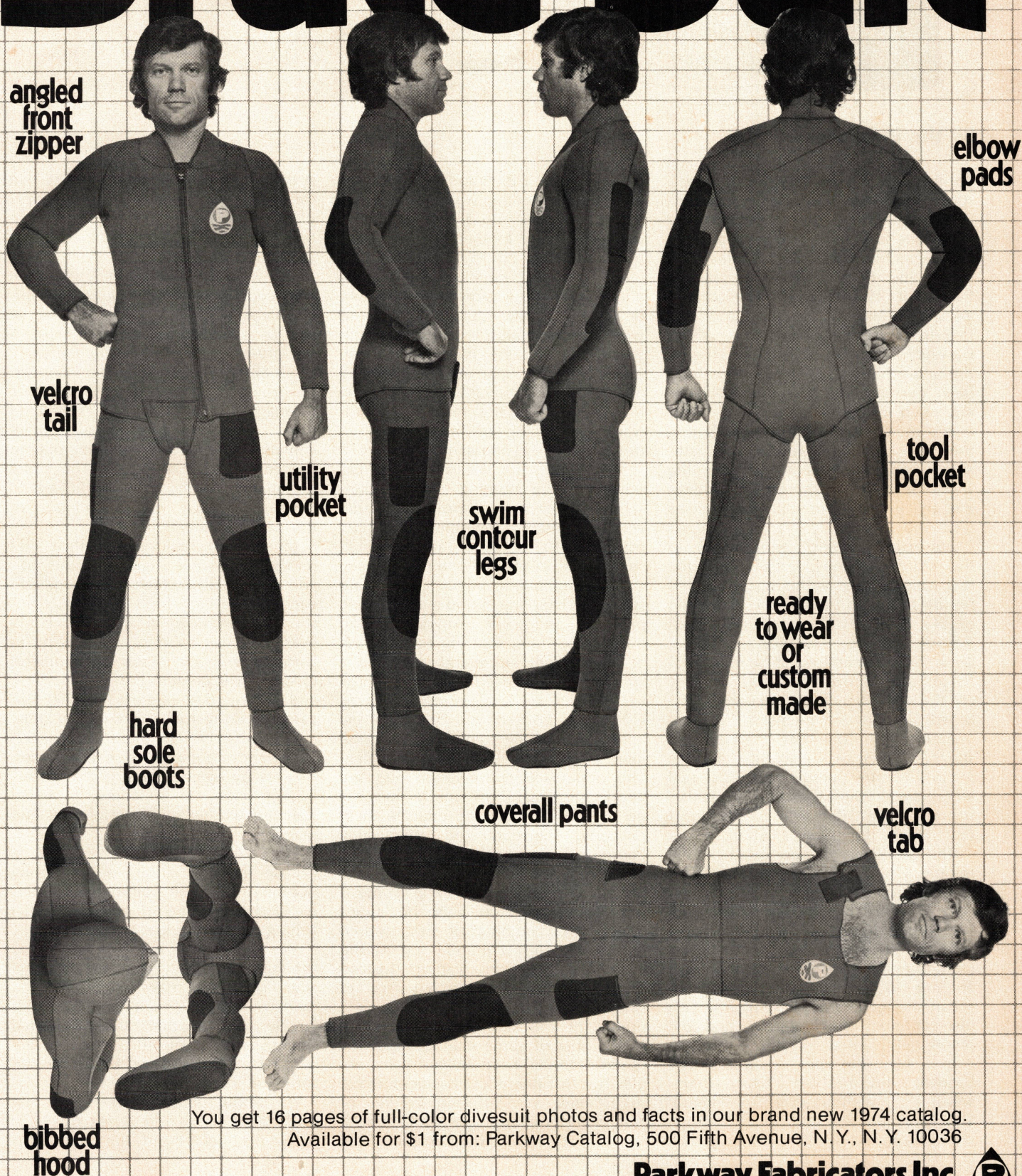
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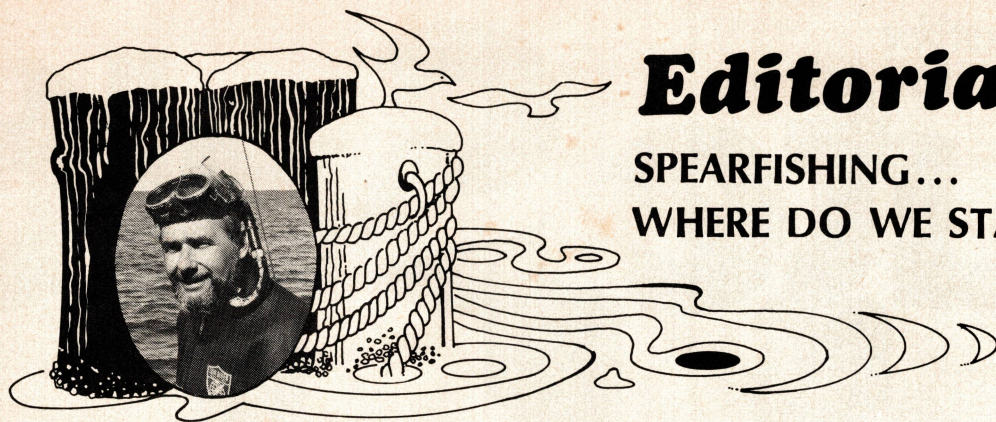


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Editorial

SPEARFISHING... WHERE DO WE STAND?

By the Publisher

In this age of ecological awareness, spearfishing has become as unpopular as halitosis. World diving leaders like Hans Hass and Jacques Cousteau have condemned it. Islands like Bermuda and Bonaire have completely banned it. The Bahamas have banned all spearfishing with scuba, and limited free diving methods to only the Hawaiian sling and pole spear. The entire upper half of the Florida Keys have been declared off limits to spearfishing, with heavy fines and jail sentences meted out to violators. Strong pressures from both outside and within our sport continue to push for the abolition of spearfishing tournaments, and the future of the speargun seems dark and dismal.

But wait . . . there's another side to this story. Is the spearfisherman the real cause of our withering oceans? Is he the primary threat to the extinction of our fish life? The answer is "no." Sewage outfalls, chemical pollution, land development, and commercial fishing are the major culprits . . . they are the real killers of our oceans. Combined, these deadly elements kill more marine life in one day than all the spearfishermen of the world can catch in a lifetime! But because the real killers are untouchable, and the spearfishermen are vulnerable, it's the sport that suffers the public's wrath.

The spearfishermen are caught in the middle. On one side are the hard core conservationists clamoring for protection of every fish in the ocean. On the other side are the silent, but enormously efficient, commercial fishermen. They take more fish, lobster, and abalone in one day than the poor spearfishermen take all year. The fish life continues to disappear, and the divers get blamed for it.

In a way, the spearfishermen have brought this problem upon themselves . . . without even knowing it. The game hunters and line fishermen went through this very same sequence

of trials and tribulations. Seeing the handwriting on the wall, they organized themselves into a cohesive working force. They lobbied for fair legislation, established game reserves for their activities, restocked their dwindling supplies of game and fish, and developed public education programs with the emphasis on safety and conservation. Both the hunters and line fishermen have learned the meaning of "game management." Yes, they pay for licenses, but this money goes toward the raising of more game — trout hatcheries, pheasant farms, etc.

Meanwhile, the spearfisherman has done little or nothing to help himself or his professed sport. In twenty years of organization, they have only managed to organize and conduct spearfishing contests. Nothing has been done about public education for safe speargun handling, good conservation practices, and so on. Anyone can go into a dive store, sporting goods store, or department store and purchase a speargun. They need not know how to use one, or what kinds of fish to shoot (or not shoot), or have any knowledge of the state fish and game laws. Novice divers are the most flagrant violators of conservation laws and good sportsmanship simply because no one has bothered to educate them properly. The organized spearfishing community has neglected to develop any forms of control or self-disciplines for their sport. Spearfishing contests have been based on both the largest and greatest number of fish speared . . . completely contradictory to the basic laws of conservation! Instead of letting the breeders go free to spawn more fish, they often give extra points for knocking off the big ones! In the area of game management, the spearfishermen have been totally neglectful. Not one effort has been made to establish a spearfishing reserve or restocking program. Like ostriches with their heads stuck in the sand, the

spearfishermen continue to insist that the ocean has an inexhaustible supply of fish. This complacency cannot continue if spearfishing is expected to survive as a sport.

Many people, both spearfishermen and conservationists, have asked this magazine to take a stand on the issue of spearfishing, and so here is our present viewpoint on the issue . . .

(1) SKIN DIVER no longer supports or promotes competitive spearfishing tournaments as they are conducted today. This activity is socially unacceptable and clearly detrimental to the entire sport of diving. The game of killing, for the sake of killing, is contrary to love and appreciation of the ocean's natural beauty.

(2) We do believe that it is still man's undeniable right to hunt for, and shoot, fish which he intends to eat. Hunting for food is a basic instinct buried deep in all of us. However, we must conduct our hunting in harmony with the ocean environment. Overkill will deplete the fish supplies, and so we must strive to restrict our catches and restock wherever possible.

(3) SKIN DIVER plans to publish views and arguments from both sides. Articles by conservationists and spearfishing buffs are welcome, provided they are written in a sensible, tasteful manner.

(4) SKIN DIVER shall endeavor to expose the real causes of our dying oceans. Articles on pollution, destructive land development, and commercial fishing will continue to pour forth.

We predict 1974 will be a lively year for this issue. It is quite possible that spearfishing may make a comeback . . . perhaps in a new manner. It depends largely on whether the dedicated spearfishermen of this country are ready to fight and work for the reforms necessary for survival.

It's about time we realized that nothing in this world is for free . . . including the fish in the ocean. ➤

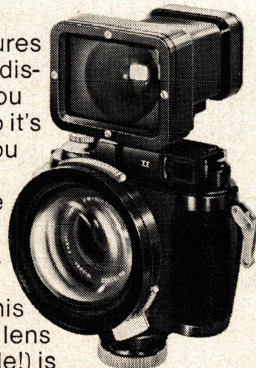


THE UNDERWATER ADVISER

Underwater photography was revolutionized by the little camera that needs no housing and handles easier under water than many cameras do on land. No more big, bulky, clumsy housings that weight more by themselves than the camera does by itself. Just the little Nikonos (the latest model is the Nikonos II) that goes down to 160 feet without a second thought. But now there's more than just the camera. There's a whole Nikonos System, including four lenses, a closeup outfit, a flash unit, special finders and more. So many accessories that we thought it was about time for a complete system guide; the Nikonos Underwater Adviser!

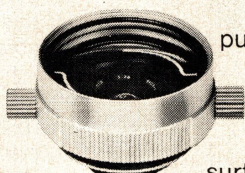
New 15mm f2.8 UW-Nikkor Lens

It's best to shoot underwater pictures at about **half** the distance at which you can see well—so it's important that you be able to get as close as possible and still get the whole subject in. Especially in murky waters. This ultra-wide-angle lens (94° picture angle!) is made to order.



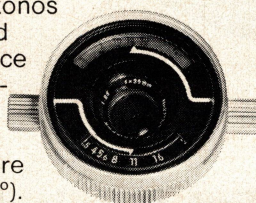
28mm f3.5 UW-Nikkor Lens

A medium-wide-angle (59°) lens—the first ever designed purely for underwater use (the 15mm, was second). A good all-around choice where no surface photography is contemplated. Focuses down to 2 feet.



35mm f2.5 W-Nikkor Lens

The standard Nikonos lens. Can be used both on the surface (where it's a moderate wide angle lens at 62°) or underwater (where it's a normal 46.5°).



80mm f4 Nikkor Lens

Another amphibious lens. Where the water is clear enough, it's perfect for shooting denizens of the deep who might be scared away if you came too close (22° picture angle). On the surface, it's



a slightly more moderate telephoto (30° 20'). Focuses down to 3.3 feet.

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Nikonos Underwater Flash

By the time you're down 33 feet, all red light has been absorbed by the water, and your color pictures will have a strong blue-green cast—unless you use flash. Ideal, too, for closeups, since it permits the use of smaller lens openings, which means focusing is less critical. Write to Nikon Inc., Garden City, New York 11530. Subsidiary of Ehrenreich Photo-Optical Industries, Inc. (In Canada: Anglophoto Ltd., P.Q.)



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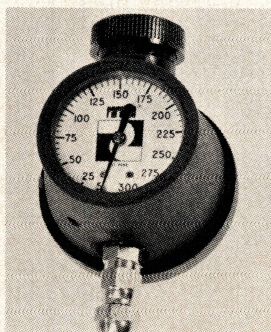
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... As president of Scubaventures it is my painful duty to announce that as of November 1, 1973, Scubaventures, Inc. no longer exists.

Due to a serious illness Dr. Albert Alexander, financial backer and owner of Alexa, feels that he is no longer able to continue his support and must sell the boat. Over the past two months both he and I have attempted to find additional backers so that Seafari could continue. We have been unable to do so although the business was an immediate artistic success and the future looked exceptionally bright.

Many individuals evinced interest in backing us but the unwillingness of the insurance industry to write liability coverage for off-shore diving activities was too large an obstacle to overcome!

I would like to take this opportunity to thank all of you for your interest and support and hope that sometime, somewhere, somehow you may have the good fortune to enjoy at least a few of the sights that I have seen through Seafari!

DAVE WOODWARD

SCUBAVENTURES, INC.
FT. LAUDERDALE, FLA.

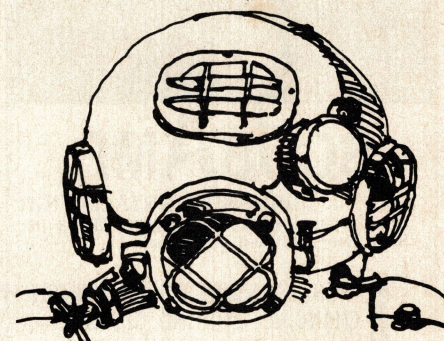
... Your editorial on buddy breathing vs. the octopus rig was extremely timely and thought-provoking, especially your statement on a two mouth-piece second stage that everyone was waiting for. While I'm not a professional inventor, I do have something of a design background and I believe I may have at least the beginning of an answer. The unit I have is not bulky and could be added to any single hose regulator. I need help in the legal and manufacturing end of the problem and am eager to work with any established company.

FLOYD GILZOW 9426 MANDALE,
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... re safety and public relations. First, I should qualify myself. I am chairman of the Life Support Systems Committee of the American Power Boat Association, a boat racing organization. I am also a diver (PADI) and have been involved in some of the problems in trying to form a local diving club.

There are some problems in both sports where it appears to me that

you can be a deep sea diver.



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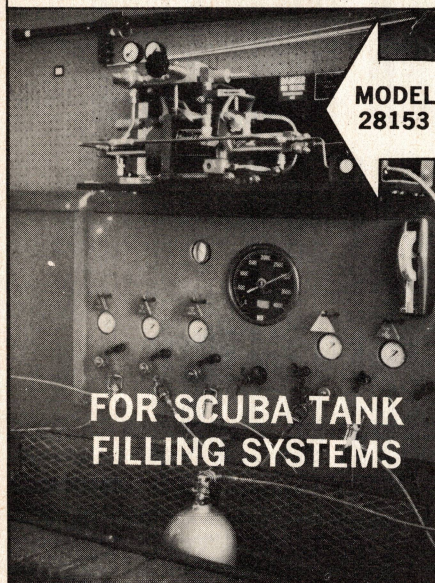
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the two can help each other. One gets the feeling that the only time the general public wants a diver around is when there is a drowning involved and a difficulty in locating the body. We have a problem getting other favorable publicity in the local media. I expect this is universal.

The boat racing clubs also find themselves in a difficult situation in obtaining adequate trained help for patrol and rescue boats during races. When there is a serious spill at high speed, the driver needs help immediately. Someone is needed to get in the water with him, get him in a safe position, and in a few cases, try to keep him alive until a rescue boat arrives with a litter and medical help. In some areas, diving clubs and independent divers are performing a real service working with boat clubs at their races.

There is always the possibility around a boat race of some diving for lost equipment. The pay will be mostly in personal satisfaction, the best seats for the races, and being in front of a crowd of people all day as a very important part of the operation. Any publicity through the media is gravy. Many of the spectators at boat races are, at other times, the same characters who use a divers flag and buoy as a marker for a water ski course. Perhaps a little education and exposure might help. If the above seems like a worthwhile program, I suggest divers and diver clubs contact the boat clubs in their areas.

J. A. LANGLEY LIFE SUPPORT COM-
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BOAT ASSOCIATION

... I have been a subscriber to your magazine for several years. During this period I have found it most gratifying to note that a publication that was good when I saw the first issue, has even improved with each issue. I find all of your features interesting, but occasionally one appears that is particularly outstanding. Such an article was in the August 1973 issue by Gary Rubottom, entitled "Demise of a Reef." I would like to personally congratulate the author on this particular article, which I consider one of the most beautiful pieces of prose that I have ever read.

FRED F. BLOODGOOD

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THE SPORTSWORLD SOUTH, INC., 5015 Penn Ave., S. Edina
- MISSOURI**
T. & D. DIVE SHOP, 8135 North Oak Trwy., Kansas City
WEST END DIVING & SALVAGE CO., INC., 4714 Bridgeton Sta. Rd., Bridgeton
- NEBRASKA**
BILL'S SCUBA SHOP, 986 S. 72nd Ave., Omaha
- NEVADA**
DESERT SCHOOL OF DIVING, 4000 Boulder Hwy., Las Vegas
- NEW HAMPSHIRE**
ATLANTIC AQUA SPORT, 522 Sagamore Road, Rye
DIVERS DEN DIVE SHOP, 1 Leda Ave., Manchester
UNDERSEA ENTERPRISES, 16 State St., Portsmouth
- NEW JERSEY**
AQUATIC RECREATIONAL ENT., Delsea Drive Rt. 47, Hurlville
DIVERS COVE, Rt. 35, Laurence Harbor
M & E MARINE SUPPLY, Rt. 130 Woodwyne, Camden
UNDERWATER SUPPLY OF N.J., Rt. 17, Rochelle Park
- NEW YORK**
BFV PRO DIVE SHOP, 175 Fort Hill Ave., Canandaigua
CENTRAL SKINDIVERS, 160-09 Jamaica Ave., Jamaica, L.I.
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GREAT LAKES DIVERS, 244 Niagara Falls Blvd., Tonawanda
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- NORTH DAKOTA**
TROPHY HOUSE, 1909 S. Washington, Grand Forks
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EUGENE SKINDIVERS SUPPLY, 1060 W. 6th St., Eugene
NORTHWEST DIVERS SUPPLY, 852 S. Broadway, Coos Bay
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PROFESSIONAL DIVING SERVICES CO., 620 Pillow Ave., Cheswick
SMOKEY'S DIVERS DEN, 412 N. Duke St., Lancaster
TEACH TOUR DIVING CO., 1380 Biel St., Nazareth
TEACH TOUR DIVING CO., 1500 Hamilton Ave., Allentown
- RHODE ISLAND**
DIVERS WORLD, 754 Main St., East Greenwich
- TEXAS**
GUILLEY'S DIVE SHOP, 4455 S. Padre Island Drive, Corpus Christi
TEXAS SKINDIVING SCHOOLS, 4320 N. Lamar, Austin
TEXAS SKINDIVING SCHOOLS, Rt. 7, Box 844, Austin
TEXAS DIVERS SCHOOL & STORE, 1943 N. New Braunfels, San Antonio
- UTAH**
UNIVERSAL SAFETY & FIRE EQUIPMENT CO., 727 S. W. Temple, Salt Lake City
- VIRGINIA**
AQUA-LUNG DIVING CENTER, 805 W. Little Creek Rd., Norfolk
- WASHINGTON**
DIVERS HUT, 4831 Arsenal Way, Bremerton
EASON'S DIVING SERVICE, 8420 Martin Way, Olympia
NEW ENGLAND DIVERS, INC., 11009 First So., Seattle
NORTHWESTERN SCHOOL OF SKINDIVING, 2123 No. 30th St., Tacoma
SEATTLE SKIN DIVERS SUPPLY, 1657 Harbor Ave., S.W. Seattle
UNDERWATER SPORTS, 107th & No. Aurora Ave., Seattle
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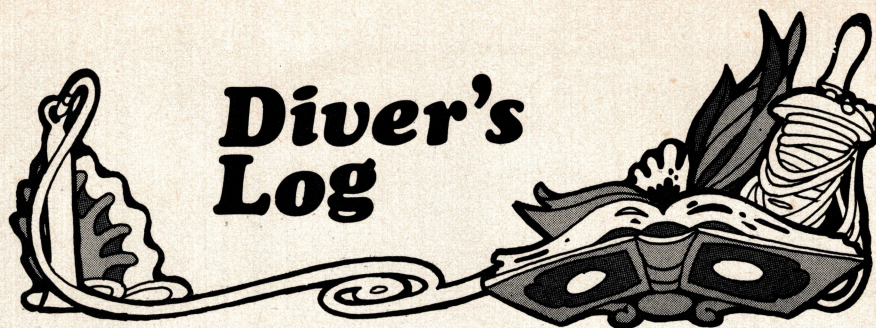
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BE SAFE RATHER THAN RESCUED

BY JOSEPH D. FORBES

The Boone Underwater Rescue Unit of Boone, Iowa, was founded in 1965 to fill a need in an area where more and more people are turning to water as a recreational media. The primary function of the unit is search and recovery for those who are victims of water accidents, but they have also retrieved cars, snowmobiles, boats, motors, fishing gear and other miscellaneous items. The unit consists of 20 men incorporated into a non-profit organization, depending on donations for support. Its services are available to law enforcement agencies, municipal authorities, private individuals and groups in central Iowa.

The men in the rescue unit are providing a truly valuable service to their community, but they feel they are also doing themselves a favor by staying involved in diving in a demanding but exciting way. Their philosophy is that no matter how good a C-card course is, it's what follows the course that really matters. The rescue unit program has proved extremely effective in building confidence in themselves as divers, partly due to the rigorosity of the unit's requirements.

Prospective members must have a C-card from a fully recognized training course, such as YMCA, NAUI or PADI, before submitting an application to the unit. In addition to this, each diver is required to make one ice dive, and is further encouraged to make an additional ice dive each winter. Each member is required to complete a water safety training course, and each member must have a current Red Cross first aid training card.

The next requirement is to complete the unit's search and recovery course which consists of 6 to 12 three-hour pool training sessions on search and recovery methods. The methods are discussed in classroom sessions and application is practiced in the pool.



Joseph D. Forbes has been an avid water sportsman since childhood and began diving while stationed on Okinawa with the U.S. Air Force in 1952. He is a YMCA certified diver and a member of the Boone Underwater Rescue Unit of Boone, Iowa.

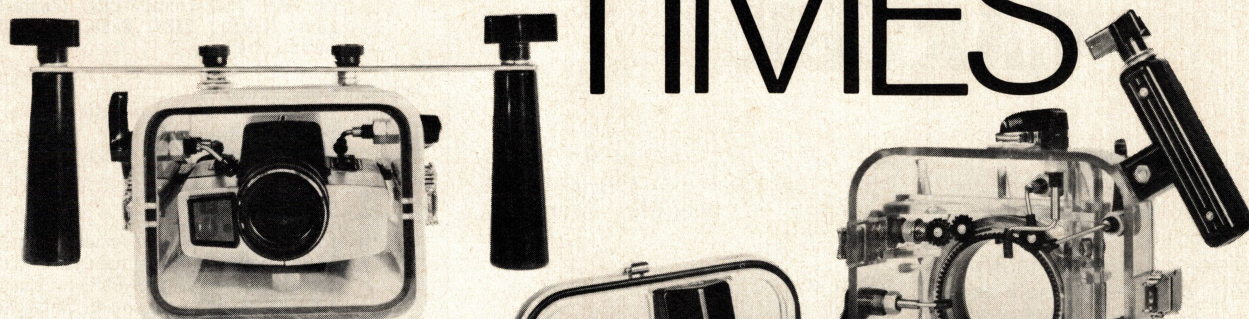
The unit is highly trained and one of the best equipped in the central midwest. Three years ago Joe built his own 20 foot runabout. He holds a B.S. degree in science and an M.A. in industrial education. He was a high school and college teacher for ten years before joining Wick Homes, a division of Wick Bldg. Systems.

The pool work involves the proper use of safety lines, weights used in recovery, search patterns, line tending, and harrassment — all of which are accomplished with a blacked-out mask. The course is climaxed by a rigid swimming test of 250 yards with a full tank and 18 pounds of weights and no wet suit. This is followed by an open water recovery session.

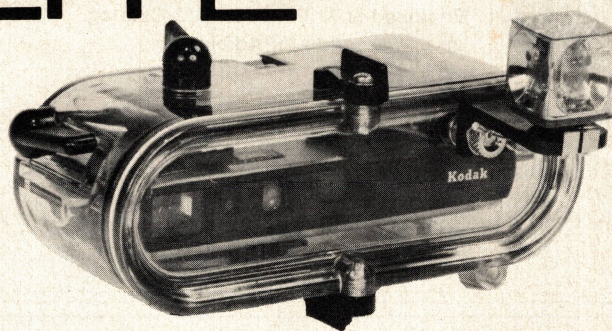
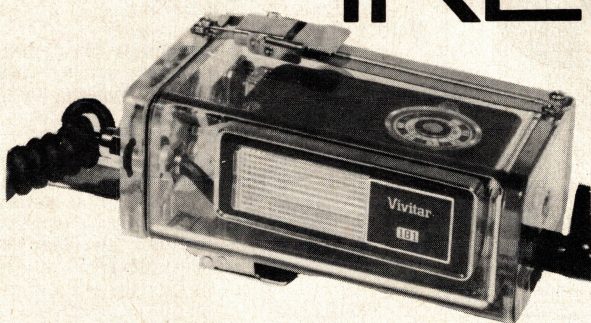
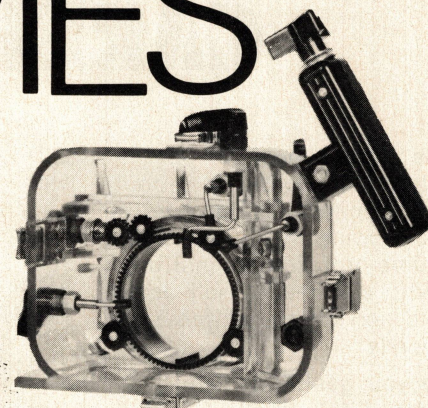
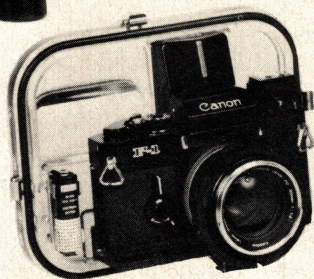
The last membership requirement is that each member attend all monthly meetings of the unit. If a member is going to be absent, he must call the unit commander to inform him of his intended absence. BURU realizes that to require this type of training for the average scuba diver would be too demanding. They believe, however, that training and diving are the ingredients that produce the physical and psychological competence necessary for those who want to feel truly at ease, but alert, in the water.

There is a certain brotherhood and camaraderie between members of the rescue unit, and they are very proud of their perfect diving record in eight years of activity. They would welcome the opportunity to correspond with others who have a rescue unit, or answer questions for those persons who would like to start a rescue unit. Address all correspondence to: James Morgan, Sec./Tres. Boone Underwater Rescue Unit, 1330 Boone St., Boone, Iowa 50036.

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NEXT
STARTING
DATES

January 21
April 15, 1974



January 10-12

5th Conference on Underwater Archaeology, Claremont Hotel, Berkeley, Calif. (Contact: George R. Fischer, National Park Service, P.O. Box 2416, Tallahassee, Fla. 32304)

January 12

Oregon Council of Diving Clubs Annual Awards and Installation Banquet, Spanish Head Inn, Lincoln City, (Contact: Edna Nelson, 2184 Gable Rd., St. Helens, Ore.)

January 26

7th Annual New York State Divers Seminar, Brewerton, N.Y. (Contact: Dick Zielinski, 7163 Willow Rd., N. Syracuse, N.Y.)

February 9

16th Illinois Council Annual Awards Dinner Banquet & International Photographic Competition Exhibition, Sheraton Chicago Hotel. (Contact: Betsy Riley, 2125 N. Humbolt, Chicago, Ill.)

February 18-23

West Michigan Sportland Boat Show, Civic Auditorium, Grand Rapids, Mich.

February 23

Planet Ocean symposium and film festival, Stony Brook University, Long Island, N.Y. (Contact: North Shore Diving Center, 58 Larkfield Road, East Northport, N.Y. 11731)

March 8

California U/W Film Exposition, Anaheim Convention Center, 8 p.m. exhibits, 3-8 p.m. (Contact: California Underwater Exposition, P.O. Box 10931, Santa Ana, Calif. 92711)

March 9

20th Boston Sea Rovers Clinic. Seminar, Boston University; evening show, John Hancock Hall. (Contact: Robert Newberry, 10 Fitz Ter., Chelsea, Mass.)

April 6

Underwater Symposium, Harvard University, 11 a.m.-4 p.m. Film Review, John Hancock Hall, 8 p.m. (Contact: Fred Calhoun, P.O. Box 291, Back Bay Annex, Boston, Mass. 02117)

April 20

Underwater Film Review, Columbia University, New York City, 8 p.m. (Contact: Maurice Smith, Chalet Club, 135 E. 55th St., New York, N.Y. 10022)

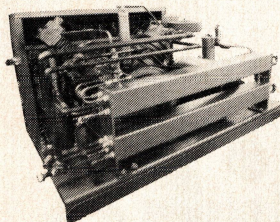
September 21

Underwater Film Review, Fall Edition, John Hancock Hall, Boston, Mass. 8 p.m. (Contact: Fred Calhoun, P.O. Box 291, Back Bay Annex, Boston, Mass. 02117)

October 19

Underwater Film Review, Fall Edition, Columbia University, New York City, 8 p.m.; symposium, 11 a.m.-4 p.m. (Contact: Maurice Smith, Chalet Club, 135 E. 55th St., New York, N.Y. 10022)

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20TH BOSTON PARTY

The Boston Sea Rovers will hold their Twentieth Annual Underwater Clinic on March 9, 1974. One of the oldest gatherings of its kind, the Clinic always brings out the biggest names of the underwater world. Last year, completely unannounced, Jacques Yves Cousteau walked in to attend some of the seminars and make the presentations. Smokey Roberts was the Diver of the Year, and Eugenie Clark, The Shark Lady; Jack McKenney, editor of SKIN DIVER; photographer David Doubilet of National Geographic; Douglas Faulkner of *The Hidden Sea*; and Bill McDonald of U.S. Divers were all in attendance.

The Twentieth Annual Clinic will be at Boston University for the day seminars, and at John Hancock Hall in the evening. Price is \$6 for day and evening. There will be a chance to meet the speakers at the Laugh-In Party at 11 p.m., with open bar — \$5. Ticket chairman is Robert Newberry of 10 Fitz Terrace, Chelsea, Massachusetts 02150. >>>

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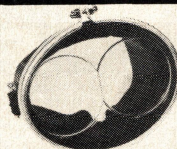
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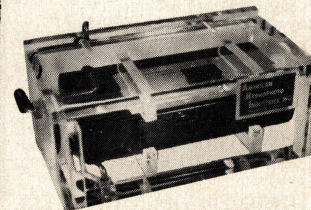
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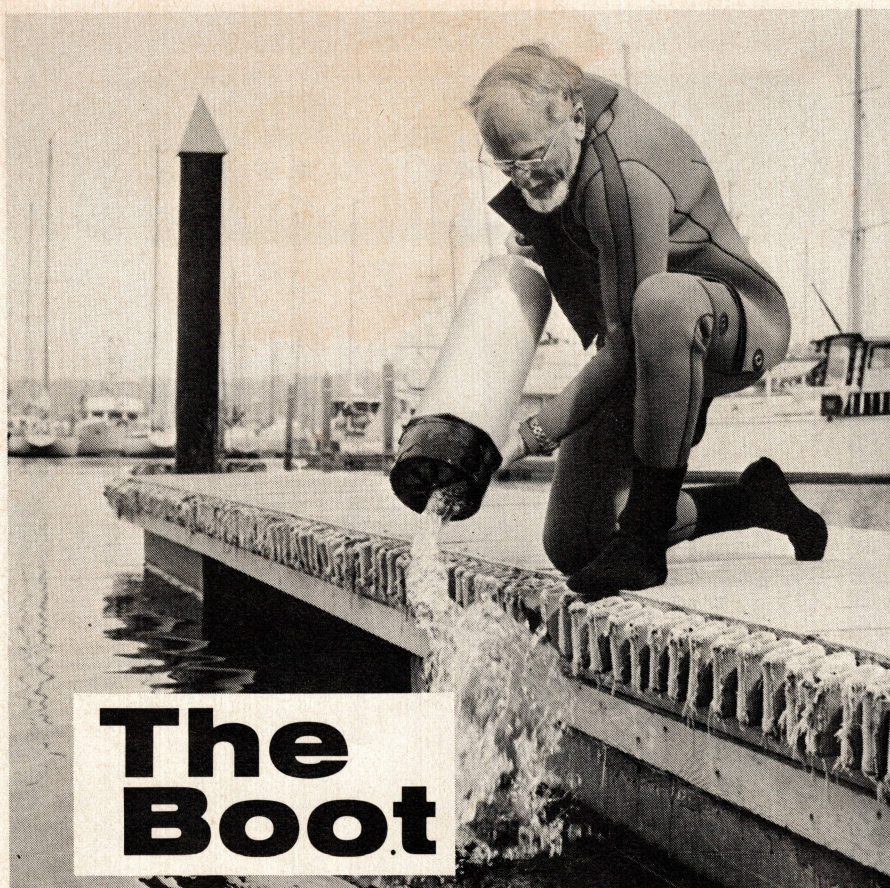
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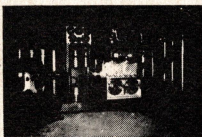
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January 4-12

NAUI Instructor Certification Course, Honolulu, Hawaii. (Contact: NAUI Pacific Branch, 867 Basin St., San Pedro, Calif. 90732)

January 7

Commercial Diving Class. (Contact: Divers Institute of Technology, Dept. S, Box 70312, Seattle, Wash. 98107)

January 7

Commercial Diving Class, 16 weeks. (Contact: The Ocean Corp., 2120 Peckham, Houston, Texas 77019)

January 7-March 15

NASDS College, San Diego. (Contact: NASDS Educational Division, 1214 Rosecrans, San Diego, Calif. 92106)

January 9 & 23

Prof. Regulator Repair Technician Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago, Ill. 60632)

January 10 & 24

Underwater Photo Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago, Ill. 60632)

January 11-13

PADI Certified Instructor Institute, Nazareth, Pa. (Contact: Teach Tour Diving Co., P.O. Box 390, 138C Beil Ave., Nazareth, Pa. 18064)

January 18-20

YMCA/PADI ADP Seminar, Techniques of Cave Diving, Decompression, Repetitive Diving, Fla. Institute of Technology, Melbourne. (Contact: Daryl D. Burns, 106 Wimico Dr., Indian Harbor Beach, Fla. 32937)

January 18-20

PADI Certified Instructor Institute, Nazareth, Pa. (Contact: Teach Tour Diving Co., P.O. Box 390, 138C Beil Ave., Nazareth, Pa. 18064)

January 19-26

NAUI Instructor Certification Course, Las Vegas, Nev. (Contact: NAUI Pacific Branch, 867 Basin St., San Pedro, Calif. 90732)

January 21

Professional Diving Instructor Course, Monterey, Calif. (Contact: Ed Brawley, 598 Foam St., Monterey, Calif. 93940)

January 25-27

PADI Certified Instructor Institute, Nazareth, Pa. (Contact: Teach Tour Diving Co., P.O. Box 390, 138C Beil Ave., Nazareth, Pa. 18064)

January 26-27

YMCA Instructor Training Workshop I & II, Kalamazoo, Mich. (Contact: Ronald H. Smith, 33191 Kathryn, Garden City, Mich. 48135)

January 26-27

YMCA Instructor Updater. Lorain Ohio. (Contact: Dr. John Simpson, 33112 Lake Rd., Avon Lake, Oh. 44012)

January 26-27

Midwest Ice Diving Course, Chicago.
(Contact: Berry, 4889 S. Archer Ave.,
Chicago, Ill. 60632)

February

NAUI Equipment Seminar, Los Angeles.
(Contact: NAUI Pacific Branch, 867
Basin St., San Pedro, Calif. 90732)

February

NAUI Ice Diving Seminar, Flint, Mich.
(Contact: NAUI Central Branch, Box
14156, Minneapolis, Minn. 55414)

February 4

Commercial Diving Class. (Contact:
Divers Institute of Technology, Dept. S,
Box 70312, Seattle, Wash. 98107)

February 5 & 19

Professional Regulator Repair Tech-
nician Course, Chicago. (Contact: Berry,
4889 S. Archer Ave., Chicago 60632)

February 7 & 21

Underwater Photo Course, Chicago.
(Contact: Berry, 4889 S. Archer Ave.,
Chicago, Ill. 60632)

February 9

NAUI Ice Diving Seminar, Nashua, N.H.
(Contact: NAUI North Atlantic Branch,
Box 291, Back Bay Annex, Boston,
Mass. 02117)

February 9, 16, 23

NAUI Advanced Physiology Seminar,
Houston, Texas. (Contact: NAUI South-
west Branch, 2120 Peckham St., Hous-
ton, Texas 77019)

February 14-17

NASDS Store Owners Only Clinic, Chi-
cago. (Contact: NASDS Educational
Division, 1214 Rosecrans, San Diego,
Calif. 92106)

February 16-17

YMCA Instructor Training Workshop III
& IV, Lansing, Mich. (Contact: Ronald
H. Smith, 33191 Kathryn, Garden City,
Mich. 48135)

February 16-17

YMCA, Scuba Instructor Institute.
Cleveland, Ohio. (Contact: Dr. John
Simpson, 33112 Lake Rd., Avon Lake,
Ohio 44012)

February 23-24

YMCA, Scuba Instructor Institute.
Springfield, Ohio. (Contact: Fred D.
Crownier, 7959 Dixie Hwy. No. 3,
Florence, Kentucky 41042)

February 23-24

Midwest Ice Diving Course, Chicago.
(Contact: Berry, 4889 S. Archer Ave.,
Chicago, Ill. 60632)

February 23-March 2

Diving Medicine course (physicians
only), University of Hawaii School of
Medicine. (Contact: Richard H. Strauss,
M.D., Univ. of Hawaii School of Medi-
cine, 1960 East West Rd., Honolulu,
Hawaii 96822)

March

YMCA Instructor Institute, Rochester,
N.Y./New England area. (Contact: Walt
Hornberger, 7161 Spire Falls Rd.,
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Duncan Dive designs for in and out of the water.

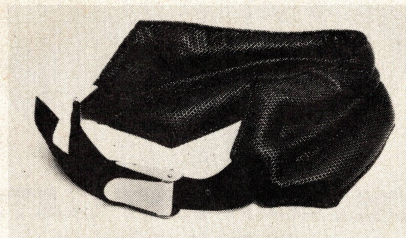
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Duncan Dive's flexible weight belt ends clumsy annoying weights bothering you as you swim.

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The Duncan Dive Belt puts pleasure where there used to be lumps and bumps.



Belts are available in four colors:* Black, Dark Blue, Sky Blue and Bright Orange.

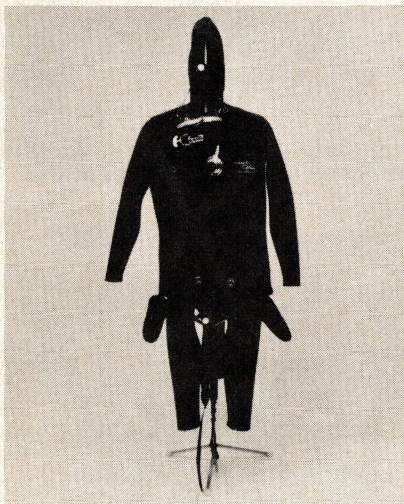
Large Size — 30 pound shot capacity, *Available in Black and Bright Orange only.

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March 9, 10, 23, 24

Midwest Ice Diving Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago, Ill. 60632)

March 10, 14, 21, 24

Underwater Photo Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago Ill., 60632)

March 11

Commercial Diving Class. (Contact: Divers Institute of Technology, Dept. S, Box 70312, Seattle, Wash. 98107)

March 15

NAUI Int'l Photo Competition, Seattle, Wash. (Contact: NAUI North Pacific Branch, 6531 N.E. 198th St., Seattle, Wash. 98155)

March 19

NAUI Advanced Diving Course. (7 weekends). Washington, D.C. area. (Contact: LCDR B J. McGee, USN, 4206 Plaza Lane, Fairfax, Virginia 22030)

March 23

NAUI Diver Rescue Workshop, Philadelphia, Pa. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, New Jersey 08023)

March 23-24

YMCA, Scuba Instructor Institute. Youngstown, Ohio. (Contact: Dr. John H. Simpson, 33112 Lake Rd., Avon Lake, Ohio 44012)

March 23-24

NAUI Man's Extension Into The Sea, Seattle, Wash. (Contact: NAUI North Pacific Branch, 6531 N.E. 198th St., Seattle, Wash. 98155)

March 23-24

YMCA Instructor Certification Institute, Port Huron, Mich. (Contact: Ronald H. Smith, 33191 Kathryn, Garden City, Mich. 48135)

March 24-29

NASDS Clinic, Rhode Island. (Contact: NASDS Educational Division, 1214 Rosecrans, San Diego, Calif. 92106)

March 30

NAUI U/W Symposium & Film Review, College Park, Md. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, N.J. 08023)

March 30

YMCA Instructor Institute, Albany, N.Y. area. (Contact: Walt Hornberger, 7161 Spire Falls Rd., Gansevoort, N.Y. 12831)

March 31

NAUI Underwater Photo Seminar, College Park, Md. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, N.J. 08023)

April 6

NAUI Underwater Symposium, Cambridge, Mass. (Contact: NAUI North Atlantic Branch, Box 291, Back Bay Annex, Boston, Mass. 02117)

(Continued on Page 78)

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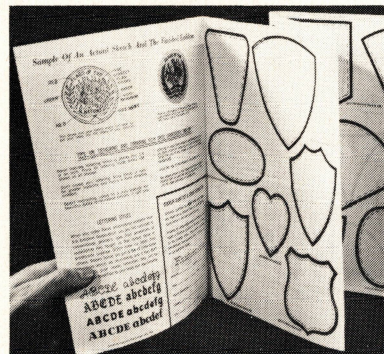


New Gear

Henderson Aquatics' new wet suit combines modern colors and materials with traditional quality construction. The two piece "High Diamond" suits have Farmer John pants and matching jacket, in combinations of black, orange and blue Rubatex Nylon II. The suits are double sewn and are available in 1/8", 3/16" or 1/4" thick. Prices range from \$145. Contact: Henderson Aquatics, Inc., Port Elizabeth, New Jersey 08348.

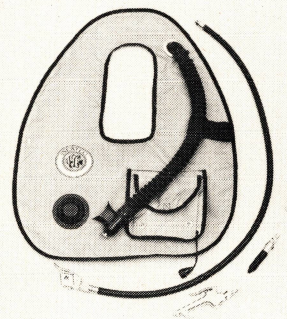


The A-B Emblem Corporation is offering their new, patented "Design-an-Emblem Guide" free for dive clubs that wish to design their own distinctive club emblems. By requesting a free copy on club letter head, a club officer will receive prompt attention and a copy of A-B's full color brochure of Sports Club Emblems. Write directly to: A-B Emblem Corporation, P.O. Box 40695, Weaverville, North Carolina 28787.

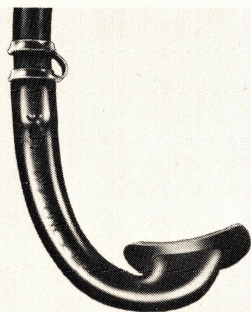


A new, extra low volume Baja mask from AMF Swimaster offers easy clearing, increased peripheral vision and reduced distortion for better underwater viewing. The protruding nose pocket is easy to grip, even with quarter-inch gloves, for quick pressure equalization. Positive sealing is gained by a soft, comfortable double-edged face skirt. The lens is tempered glass. \$18.50. Contact: AMF Swimaster, 3801 S. Harbor Blvd., Santa Ana, Calif. 92704.

Seatec is manufacturing the TD 1000 buoyancy compensator featuring double bag construction and 16 gram CO₂ cartridge. The quick release vest inflator attaches to standard CO₂ manifold or, with special fitting, can be placed anywhere on any vest. Available with following attachments: air gun, air nozzle or tire filler. It sells for \$65. Contact: Seatec, Inc., 425 West Palmyra Street, Orange, California 92666.

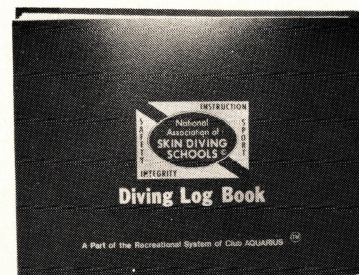


A new "off-set" mouthpiece configuration has been added to Scubapro's patented Jet Snorkel design. The new mouthpiece angle makes this a most efficient, comfortable and easy to use big barrel, wrap around style snorkel. Available from pro dive shops for \$5.00 or contact: Scubapro, Inc., 3105 East Harcourt, Compton, California 90221.



The B.C. II is a new buoyancy compensator from U.S. Divers featuring a scuba-fed low pressure inflator system which attaches to a diver's first stage regulator. The chest mounted inflator allows it to be inflated with either hand, and the supply hose is quickly and easily removed by using the quick disconnect mechanism. Comes in yellow or black. \$105. Contact: U.S. Divers Co., 3323 W. Warner Ave., Santa Ana, Calif. 92702.

NASDS has come out with a diver's log book which features specially designed waterproof pages so entries can be made immediately after every dive. The cover is made of indestructible material, and can be removed so additional pages may be inserted. Each NASDS Log Book contains a complete set of U.S. Navy decompression tables, first aid for diving accidents, and many other features. \$9.95. Contact: NASDS, 1757 Long Beach Blvd., Long Beach, Calif.

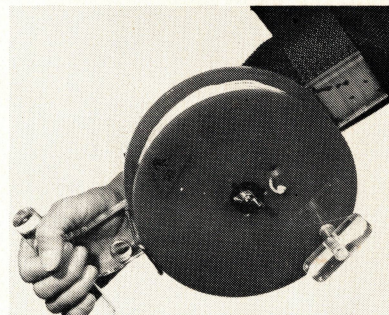


Sea Quest calls its new Mark III buoyancy compensator the "no-nonsense B.C. unit." It features a large volume self-contained over pressure valve, which can be removed for flushing salt water out of the bag through 3/4" opening. The hose is securely held in place for easy, quick use; and it has a simplified harness. Prices range from \$54.95. Contact: Sea Quest, 11525 Sorrento Valley Rd., San Diego, Calif. 92121.

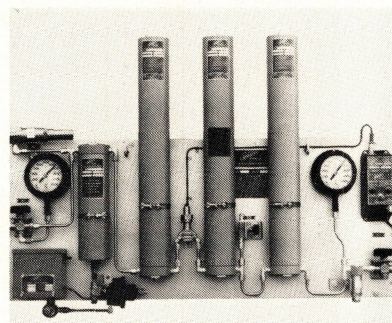


Dive Master, a two-in-one gauge from U.S. Divers, combines both a 200 foot depth gauge and a 3500 psi tank pressure gauge into one compact, hand-sized unit. It features luminous faces, neoprene rubber protective case and rubber strap to secure gauge to back pack harness. Component parts are serviceable and replaceable. Retail price is \$69.95. Contact: U.S. Divers Co., 3323 W. Warner Ave., Santa Ana, Calif.

Seareel is a seven inch diameter reel from Sea Research and Development which holds 750 feet of 3/32 line. It is held at two points for easy rewinding, and has a Velcro arm strap which allows you to let "go" without dropping the reel. The Seareel is constructed of plexiglass and delrin with stainless steel hardware, and weighs only 40 ounces including 750 feet of line. \$34.95. Contact: Sea Research and Development, Box 589, Bartow, Florida 33830.

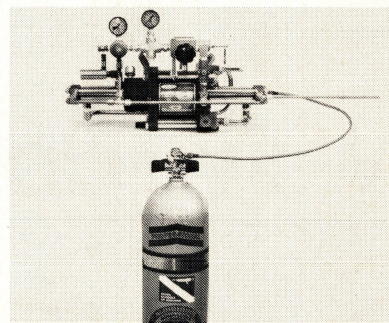


Series 8397 is the latest in the RAF line of equipment for purification of compressed breathing air. It features total elimination of carbon monoxide and carbon dioxide, removal of oil and oil vapor, hydrocarbons, excess moisture, and unpleasant odors, thus surpassing OSHA standards for breathing air. Equipment is easy to install and requires minimum service. Priced from \$2,385. Contact: Robbins Aviation, 3817 Santa Fe Ave., Vernon, Calif.

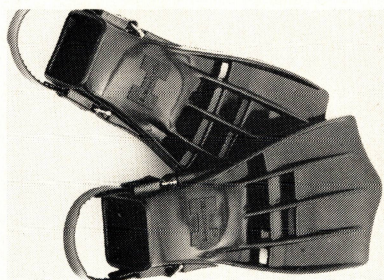


This unique new Aquadive time-depth watch is Swiss made, and combines an oil-filled bourdon tube depth gauge with an electronic high frequency Dynatron movement for time keeping accuracy. Measures depths to 200 feet. No water enters the case, eliminating the problem of salt water corrosion. Available in gray, orange or blue dial colors. \$250. Contact: Aquadive, 3600 Wilshire, Los Angeles, California 90010.

Haskel has announced a completely new breathing air amplifier for dive tank fill stations. The self-contained, air driven unit can provide rapid dive tank fills to pressures as high as 4500 psi. It was designed in response to the recent need for a method of quickly topping off the new 3000 psi dive tanks from existing 1500-2500 psi high pressure air systems. Contact: Haskel Engineering and Supply Co., 100 E. Graham Place, Burbank, California 91502.

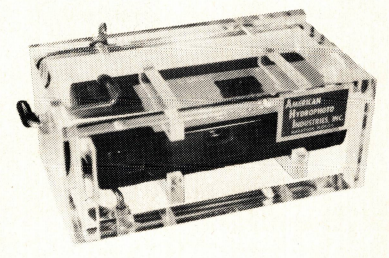


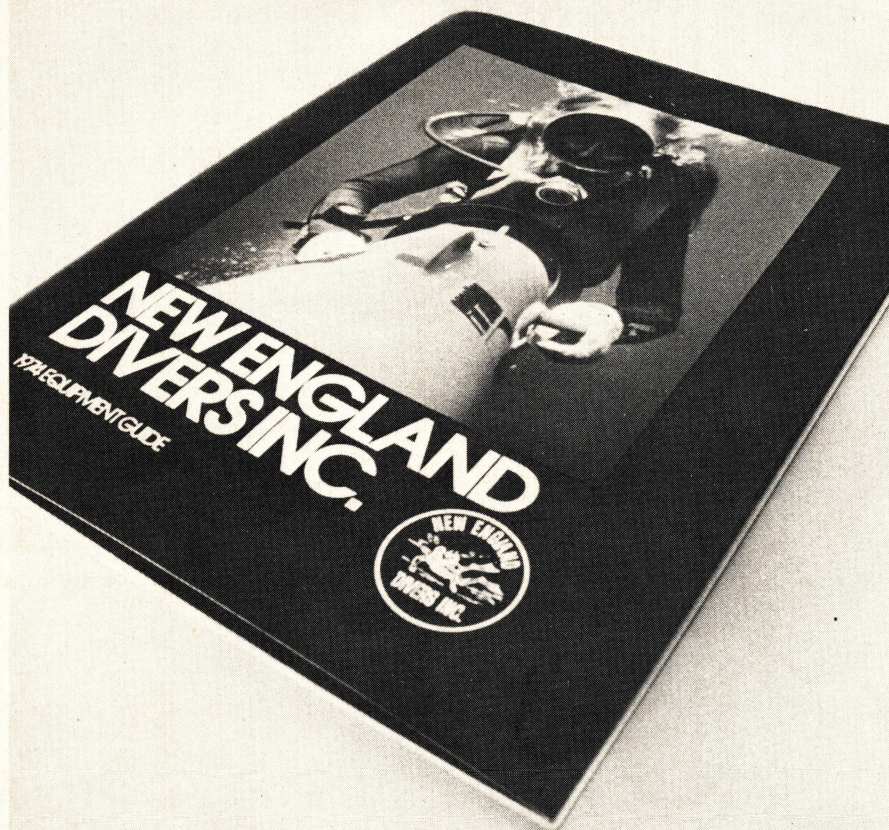
Aqua-Craft, Inc., has come out with a quick acting belt snap made of marine bronze. The clip is fixed to a stainless steel two inch loop to fix on the diver's weight belt. The spring loaded snap opens to 5/16 inch to take the heaviest game bag. Available for \$2.50. Contact: Aqua-Craft, Inc., 5258 Anna Street, San Diego, California 92110.



Healthways is introducing their new Scubamaster swim fins for 1974. These fins, professionally styled and vented are designed to provide easy, non-fatiguing propulsion under any circumstance. The vented area is balanced and positioned for maximum thrust with minimum effort. The straps are adjustable with a new strap retainer feature. \$22 per pair. Contact: Healthways, Box 45055 Los Angeles, California 90045.

American Hydrophoto is now delivering their new line of underwater camera housings, designed especially for the Kodak pocket series #20, #30 and #40. Handcrafted of optically clear, light weight plexiglass, they eliminate the need for lead weights to attain neutral or negative buoyancy and have been pre-tested to 200 feet. Contact: American Hydrophoto Industries, 7251 Overseas Highway, Marathon, Florida 33050.





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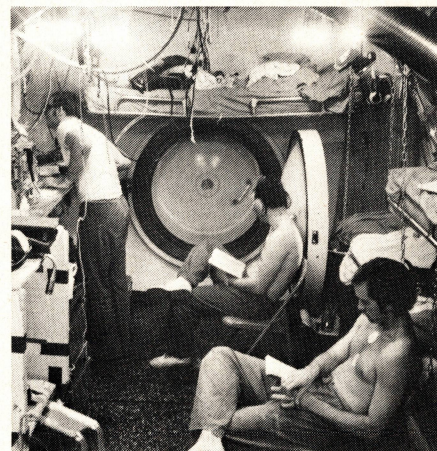
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1000 FOOT EXPERIMENTAL DIVES COMPLETED

Six divers — Geoff Baker, Peter Madison and Dutch Ritter from Oceaneering International of Houston, Texas; and Jack Atwell, Charles Meyer and Chris Teitze from the Harbor Branch Foundation in Florida — successfully completed a series of 1000 foot dives conducted in the hyperbaric research chamber facility at Duke University in North Carolina. The divers spent 16 days under pressure and made five two-hour excursion dives from the 870 foot "storage" depth to 1000 feet in an ice filled wet chamber.



Three of the participants in Project Deep Work 1000 relax in the living chamber at 870 ft. The equipment and instrumentation at left are part of the physiological and speech experiment.

The divers stayed at storage depth for a total of four days. While submerged in the freezing water, the divers performed a series of human performance and physiological experiments under the direction of Dr. Peter Bennett and Dr. John Salzano, both hyperbaric scientists at the Duke University Medical Center. The test program, which was labeled "Project Deep Work 1000," was under the medical direction of Dr. David Youngblood of Duke University.

Oceaneering's primary reason for organizing and conducting the deep diving program was to evaluate personnel work performance under conditions that realistically simulated the environmental stresses of 1000 foot cold water oil field diving. One of the objectives of the Harbor Branch Foundation, a non-profit oceanographic organization established by Seward Johnson and administered by the Smithsonian Institution, was to develop the capability of scientists to work underwater from submarines at depths of 1000 feet.

Other tests were carried out during the dives by the University of Florida Communications Science Laboratory personnel, who are working on problems related to U/W speech in high pressure helium environments.



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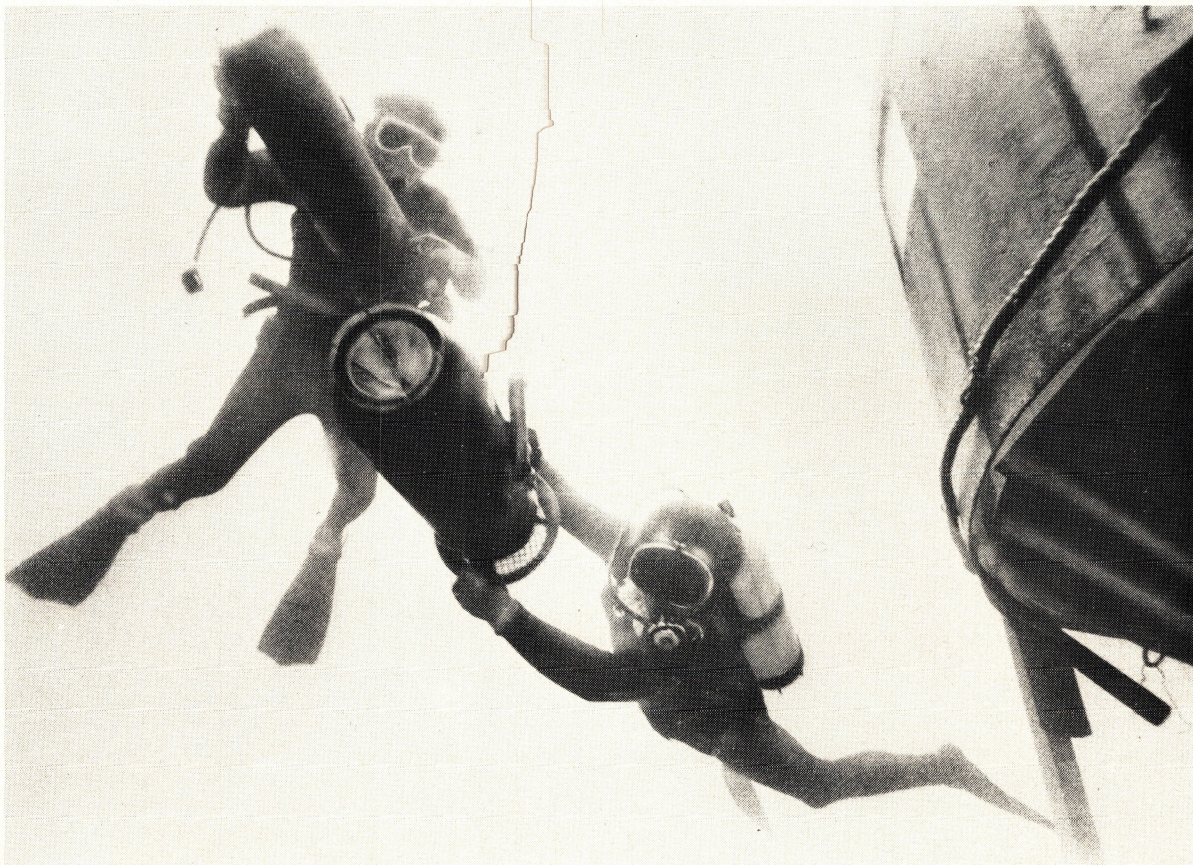
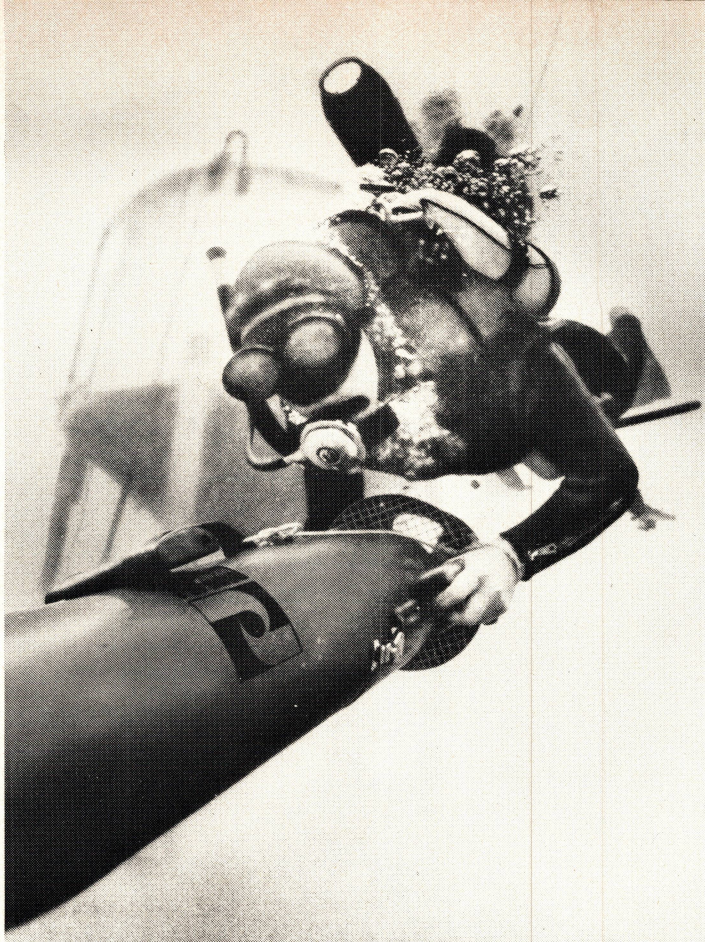
John Peterson

John Peterson's underwater photographs are unique because of the mystical quality they exude. The picture of a diver coming out from the hold of the sunken schooner *Sweepstakes*, with a diver crouching in the background, almost portrays the feeling that the wreck is inhabited by little gnomes and that John just happened to catch them emerging from their underwater home to see what mischief they could get into that day. The same feeling is portrayed in the close-up of the diver, and the picture of the bug-eyed diver on the Farallon DPV, because of the wide angle distortion. The quality of flight is enhanced by the stark contrast between the subjects and background water in the picture of two divers on underwater scooters cruising around the habitat Sublimnos.

Peterson is a newspaperman and art director for the Toronto Star. He shot these pictures while on assignment to document the proposed site for the new Fathom Five underwater park in Tobermory, Ontario, to be officially opened in 1976. He chose to use available light to "keep a feeling of identity and reality" for Star's readers. He used a Nikon F 35mm camera with a 20mm lens in an Ocean Eye housing, and submitted his roll of Tri X to the photo processing department where it was rated slightly under 400 ASA to retain as much quality as possible. The pictures were blown up to 11 x 14 prints, touched up by the art department, then copied onto 4 x 5 Plus X film. This is standard Toronto Star procedure for building contrast.

Peterson's style is simply to utilize as many above water techniques as he can while underwater. He says, "... we dominate the picture with the subject, getting as close as possible, and try to simplify it for quick understanding." The point, he continues, is to tell the story better and more compellingly with the photograph than it could be told with words — that is what makes a good newspaper picture. It also makes intriguing pictures of underwater scenes. >>>





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HALL PHOTO DIRECTOR

John Hall was recently appointed the new director of photography for the Underwater Society of America.



John has been active in diving since 1966. Over the years he has received a number of Diver of the Year awards, and has achieved many goals including serving as president of the St. Louis Scuba Club and president of the Midwest Diving Council. John's first love in diving is underwater photography, and he has won many awards, both here and abroad, in this field. >#

U/W PARK FOR ONTARIO

An enclosed walkway is planned along the bottom of Lake Huron as part of the proposed Fathom Five U/W Park, off Tobermory, Canada. Observation nodes would be placed at points of interest where spectators could view underwater sights. Fathom Five, Canada's first U/W park, would also offer scuba diving from boats, diving excursions into U/W caves and shipwrecks, and sightseeing tours in glass-bottom boats and submarine craft.

A concentration of shipwrecks, clear unpolluted water and beautiful islands interesting from ecological, biological, geological and historical points of view, were all factors leading to the choice of the site. The area, including 50 square miles of land and lake, is at the tip of Bruce Peninsula which divides Lake Huron and the Georgian Bay. It is hoped that construction of \$6 million park will begin in 1975. >#

CAVE DIVING SEMINAR

The National Association for Cave Diving will hold its annual seminar on cave diving in Jacksonville, Fla., May 25-26. Anyone interested in presenting a paper at the seminar is invited to contact the seminar committee. Abstracts should include a brief description of the subject and should be received no later than February 15. Send to NACD Seminar Committee, Bob Woolf, 5018 Kerle St., Jacksonville, Fla. 32205. >#

MOLLUSK MUNCHES MENACE

BY RICK GAFFNEY

The crown of thorns scare of recent years made us all aware of the destructive capability of *Acanthaster planci*. It literally devours coral. A trail of dead coral, white as the bleached souvenirs in a curio shop, mark its trail across a reef. This behavior becomes devastating when the crown of thorns multiply unchecked.

Recently it was noted that the tritons trumpet is a natural enemy of the *Acanthaster*. The *Charonia tritonis*, if left to its own devices, can keep a reef's population of crown of thorns down to an acceptable number. Unfortunately, the triton is a much prized shell, popular with collectors and commanding a good price in shell and curio shops. The delicate balance of nature, once upset, has a way of running amok. Such is the case when the triton population is decimated — the crown of thorns go unchecked leaving destruction in their wake.

On a recent dive off Maniniowali, on the Kona Coast of Hawaii, I was witness to nature's balancing act. I watched a triton come across an *Acanthaster* as the snail was slowly crawling over the top of a coral mound.



The scene was absolutely fascinating.

As the triton first touched the *Acanthaster*, the starfish appeared to recoil slightly as if it understood its fate. The triton, despite its heavy burden, lost no time further exploring

the make-up of its victim. Soon after the initial encounter, despite the starfish's continued efforts to escape, the outcome was certain. The *Charonia tritonis* had helped rid the reef of one more destructive pest.

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COLONEL



JOHN D.

"There must have been an angel on my shoulder in those early days," started Colonel John D. Craig, reminiscing about his first diving adventure. "I knew nothing about any diving diseases — the bends, embolism, or anything like that. The Japanese just put the hardhat on me and down I went into a whole new world — the world underwater." The reference was to a film assignment Craig had in 1931 documenting Japanese kelp farmers on Cedros Island, off Baja California, in the Pacific.

I listened with rapt attention to this tremendously charming man who still dives every summer and continues to be involved in training programs for young divers. As he recaptured the eye-expanding excitement of his first dive, I tried to imagine what it must have been like to explore under the sea 12 years before Jacques Cousteau and Emile Gagnan developed the first Aqua-Lung, before Churchill brought the first popular swim fins into the United States, or before the first diving masks were introduced to America from the Ama divers of Japan. Even though hard hat diving itself was not new in 1931, the experience must have been thrilling.

The longer I listened to the tall man with strong, broad shoulders, the more I realized that thrills, excitement and danger are the bylines of John Craig's life. He definitely is one of the great adventurers of the twentieth century. Using a camera to document his exploits, he has done things most people only dream of and gone places hard to even find on a map. The sea is only one part of his realm, but because of his early involvement he was at the vanguard of many of diving's exciting developments.

Even the story of how Col. Craig embarked on his life of adventure is amazing. That same angel must have been on his shoulder when, at the age of 20, he gambled on buying a piece of land he thought had oil on it. His father, an engineer, had marked Signal Hill, in Los Angeles, as a typical petroleum-mining area. When Craig

heard that Shell Oil had plotted and leased the northeast side of the hill, he took his life savings and bought the southeast side of the hill in partnership with Jack Osborne. The gamble paid off. Shell leased his land, drilled, found oil, and John D. Craig became a rich man.

Craig was a bit overwhelmed by his fortune at first: "I am a plain man, and such things do not happen to plain men." He was also flexible, however, and with a twinkle in his eye he tells how he set off on a tour of the world which lasted for more than six years, "being accepted as a young man of leisure and doing nothing to disprove the idea." The story of his travels, which are told in his delightful book, *Danger Is My Business*, cover experiences in 35 countries, sailing on all of the seven seas, and exploring all of the six continents.

"It was an accident which had thrown to me the opportunity to learn motion picture photography, which was the only practical asset I brought back with me from my journeys." He had happened upon a wounded man while hunting tigers in India, and had taken the man to a nearby mission for medical care. The man, it turned out, was a cameraman for a British film company. The team had been hunting tigers when they were attacked by one of the man-eating beasts. The partner had been killed outright, but the man Craig found had escaped alive.

When the director of the film company arrived, he was very upset about his men, but also needed two new cameramen. John Craig volunteered, thinking it would be a way to supplement his dwindling income, and was joined by a friend he had made during his travels, Douglas Campbell. They successfully completed the assignment, spending eight months in the jungle, and then went their separate ways. As John drifted east, visiting Delhi, Calcutta, Singapore, Mandalay, Java, the Celebes, Borneo and Australia, the idea of making films for a living slowly took shape in his mind until at last, when he booked

***"The sea is a miser,
and the world's richest woman.
The difficulty in getting her treasures
grows as I study..."***

from *Danger Is My Business*

D CRAIG

By Sherna Hough

passage home from Tahiti, he was determined to go to Hollywood to make his way.

"Hollywood is the toughest place on earth to crack," a vacationing film press agent told Craig on the ship, and as soon as Craig arrived at the Fox studios on Western Avenue he found out that it was true. Hollywood didn't need cameramen, and when the oil checks dribbled out, Craig had to take a job driving real estate prospects to see a subdivision. When he did finally get a job in films, after months of frustration, it was as second cameraman on an MGM expedition to get fishing pictures.

The expedition was a disaster. The leader of it stayed drunk most of the time, and the film clips were terrible. The footage that Craig had shot, however, was excellent and on the basis of that he was allowed to form his own expedition, with his own money, to complete the assignment. He chartered a boat, assembled a camera crew and set off for Cedros Island.

Learning to dive at Cedros absolutely changed Craig's life. He adapted two movie cameras for underwater work, borrowed diving gear, and spent months wandering up and down Baja doing what only a few men in the world had ever done before him — film underwater. When he returned to Hollywood, he found that his expedition was a success; almost all of the film was salable. He paid off the money he had borrowed, and then settled down to figure out how he could make a living at filming U/W.

With the crew that had been with him at Cedros, Craig formed his own film team and for the next four years perfected his technique as a diver, put gadgets on his gear to make it safer, and took pictures underwater for Hollywood. He was sent on assignments all over the world, had a lot of fun, and gained a lot of experience, but in the end he just wasn't happy. He had done all of his filming for other people, and what he really wanted was to make films of his own. So in 1934 he retired,

took film from many expeditions which the studios had not bought, fitted it all together, wrote a sound track, and titled the result *Sea Killers*. Then for the next year he toured the country, learning the ins and outs of the theater, and finding out what people wanted so he could make successful pictures on his own.

That was in 1934. In 1935 he was in New England, showing his film, when he received a phone call from a young Bostonian named Max Eugene Nohl. Nohl said that he was a graduate of the Massachusetts Institute of Technology in mechanical engineering, had been around the world a bit, and was experimenting with some diving gear he had invented. Would Craig be interested in seeing it? Craig said yes and they met in Boston.

"He had been working on the idea of a self-contained diving dress, which would operate without an air line and, if necessary, without a life line," Craig wrote about Nohl. "The diver would be free of tangling ropes, of the danger of having his air line cut, and of the danger of a compressor engine stopping. The same idea had occurred to me many times. I had written a scenario around the idea, and had experimented with the idea we had used in filming undersea fights — bottles of compressed air on the back of the diving dress, with a special pipe connecting them to the helmet. Nohl had gone a little farther, working out technical details . . ." It would take a lot of time, a lot of work, and a lot of money to go from ideas to actualization of a scuba system, and Craig and Nohl would need a lot of incentive. That incentive came unexpectedly from England in January, 1936.

John Craig had been invited to a congress of motion picture producers in London to display undersea camera equipment and some of the film taken with it. While he was there, he was approached by H. J. Demetriades, director of the Tritonia Corp. of Scotland, about filming the wreck of the *Lusitania*. The British ship, which had

been sunk by a German torpedo in 1915, lay in 312 feet of water off the coast of Ireland. One diver, using the new Tritonia diving dress, had been on the wreck already, but he had had a lot of problems because beside the formidable depth, the water was extremely cold and the currents particularly treacherous. The expedition would be quite a project, but before Craig left London at the end of the month he agreed to try it.

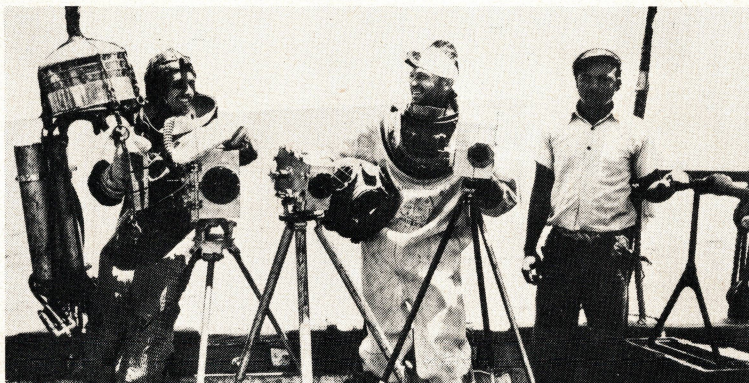
Besides the problems that would be faced during the simplest of dives on the *Lusitania*, film maker Craig was also faced with the problems of making his camera housings strong enough to work at that depth, developing lights that would not implode under so much pressure, and work out a communication system which would work from the wreck. He also knew that a film crew would need more mobility than any gear developed to date could give. They would have to go inside the wreck, and that meant being free of life lines to the surface.

The first problem Craig tackled was the one of the lights. He went straight to the Nela Park laboratory of

dashboard they mounted an auxiliary air purifier, for emergencies, which was good for one hour. Their air supply was carried in four small tanks, two feet long, four inches in diameter, with air under a pressure of 400 psi. They cleared their respiration with soda-lime compound, adding oxygen as needed.

While Craig and Nohl were testing their gear in rock quarries in Wisconsin, Hitler marched into the Rhine and Mussolini invaded Ethiopia. To salvage the *Lusitania* that summer, with war clouds forming, was not politically wise, so the British government asked that the expedition be postponed for a year. Craig and Nohl took advantage of the delay to work on their biggest problem — air — or the nitrogen in it. Besides being completely narced the whole time any diver worked at 300 feet on air, the decompression times were prohibitive, and the two adventurers set out to find a substitute gas to use.

Gene Nohl had a friend in the medical school at Marquette University in Milwaukee; a young man named Dr. Edgar End (SDM Aug. '72.) The two divers went to the



For nearly 40 years Colonel John D. Craig worked under the sea filming its great secrets. At left, he is shown in Hollywood in 1932; above, between Rene Dussaq and Bensito Gomez at Silver Shoals in 1938. Craig is to the right of Max Eugene Nohl, who is wearing their Craig-Nohl diving dress, in 1936; and is on the right in the picture taken during his T.V. series "Kingdom of the Sea." in 1956. Though officially retired, Colonel Craig still dives every summer and is very active in diving training programs.

the General Electric Company, near Cleveland, Ohio. The experts in the laboratory went to work on the problem, and 32 days later put their developed lights into a pressure tank and turned on the pumps. The hydraulic gauge went up to 700 psi, then the tank blew out. But the lights were still burning, which meant the system would work in water depths up to 1500 feet. Craig had 18 of the lamps built for himself, each of 5000 watts, giving him a total of 90,000 watts for the job.

The light problems solved, Craig went to Milwaukee — Gene Nohl's home — and together they developed the revolutionary Craig-Nohl self-contained diving suit. The helmet was built of two metal parts, with a circular glass face plate giving 360 degree vision, bolted between them. A dashboard was built into the helmet, with a compass, depth gauge, watch, microphone, receiver, transmitter and other instruments mounted on it. They even included a container for food on the dashboard for long dives.

On top of the helmet they built an air purifier canister which was good for 24 hours of diving. On the

scientist with their problem, suggesting that perhaps helium would solve it. They knew that Professor Elihu Thompson had already experimented with it for this purpose at Swampscott, Massachusetts. There was also talk of using neon, argon, hydrogen, or other gases, however, and Dr. End agreed to help by experimenting.

While Dr. End began testing air mixtures on animals, Craig and Nohl went to work on their radio equipment. They finally developed a miniature set with which they could send their messages up over the wires leading to their lights, to be rebroadcast from the support ship. To test the set, the pair arranged to attempt a broadcast from the bottom of Lake Michigan. NBC agreed to use its Blue Network for a nation-wide broadcast, and the Coast Guard offered the use of one of its cutters. News reporters agreed to be on hand and on April 12, 1937, John Craig and Gene Nohl made the world's first live underwater broadcast over Milwaukee's WTMJ.

Not long after the broadcast, on June 7, 1937, Dr. End was ready to test his findings on human guinea pigs. At

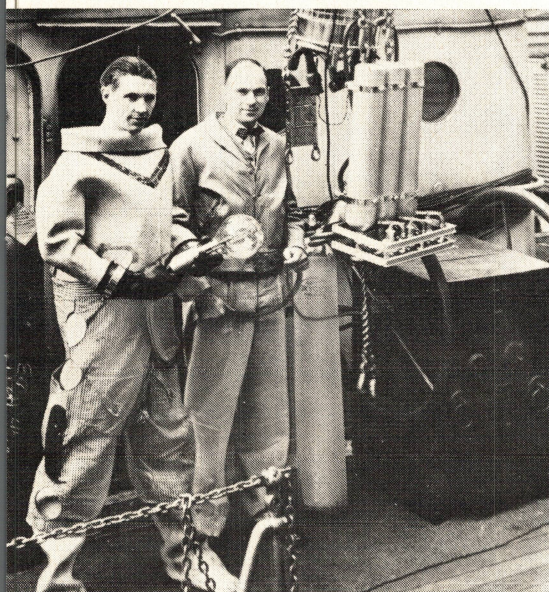
the Navy diving school in Washington, D.C., some divers had breathed pure helium and had passed out while being decompressed, but Dr. End was experimenting with a mixture of helium and oxygen. When Craig and Nohl walked into the County Emergency Hospital in Milwaukee they were to be the first human beings to try it.

The plan was to put the two at a pressure of 42 psi, for one hour. At the end of that time the pressure was to be reduced to normal in two minutes. The safe decompressing time, for men breathing compressed air, is 37 minutes. "You understand that it's your funeral if anything happens," the scientists at the hospital asked the divers. The two men nodded and entered the chamber.

The chamber dive went as planned. It was hot and extremely humid for the hour the gas was compressed, then became very cold for the two minutes the pressure was dropping. All of that was expected, however. The real test was what would happen to the men's bodies after the dive. "We were half frozen, and we came out shivering. Blankets were thrown around us. We sat down

their combat camera units. He flew more than 35 combat missions, logging more than 386 combat hours, seeing action in North Africa, Sicily, Italy, Belgium, France and Germany. He was wounded in action at Remagen Bridge on the Rhine, and was awarded the Legion of Merit, Distinguished Flying Cross, Air Medal with four Oak Leaf Clusters, the Purple Heart, Ten Battle Stars, and the Distinguished Unit Citation with three Clusters. At the end of the war he was assigned as Air Force Officer-in-Charge of Motion Pictures at the Bikini Atom Bomb Tests. The New York Times commented: "... the most spectacular films ever made."

When he returned to civilian life in 1947, Colonel Craig continued his fantastic life of high adventure making films on land, in the air and under the sea. He appeared as star and narrator on the T.V. series "I Search for Adventure," "The Kingdom of the Sea," "Danger is My Business;" and as host on ABC's "Expedition!" television series. During 1965-66, Craig hosted the "Passport Seven" T.V. series that was shown in New York



to wait for our bodies to blow up, or get paralyzed, or turn into torture chambers of pain. . . . Half an hour went by. Dr. Prudowsky examined us. We seemed to be all right. . . . Another ten minutes passed. . . . Still we were all right. The next day we felt fine, and ready for another test. So far as I was concerned, the helium test was a success," Craig wrote later.

Craig and Nohl's preparation for the *Lusitania* advanced diving in a number of ways, then. They developed a self-contained underwater breathing apparatus — the Craig-Nohl dress; they advanced underwater radio communication, camera housings and lighting systems; and they were instrumental in finding that a mixture of helium and oxygen was a safe and practical breathing mixture for deep dives. And after all of that, neither of them ever had the chance to dive on the ship because of all the political complications. But that hardly stopped John Craig's life of adventure.

When the United States entered into the Second World War, Craig joined the Air Force and became leader of

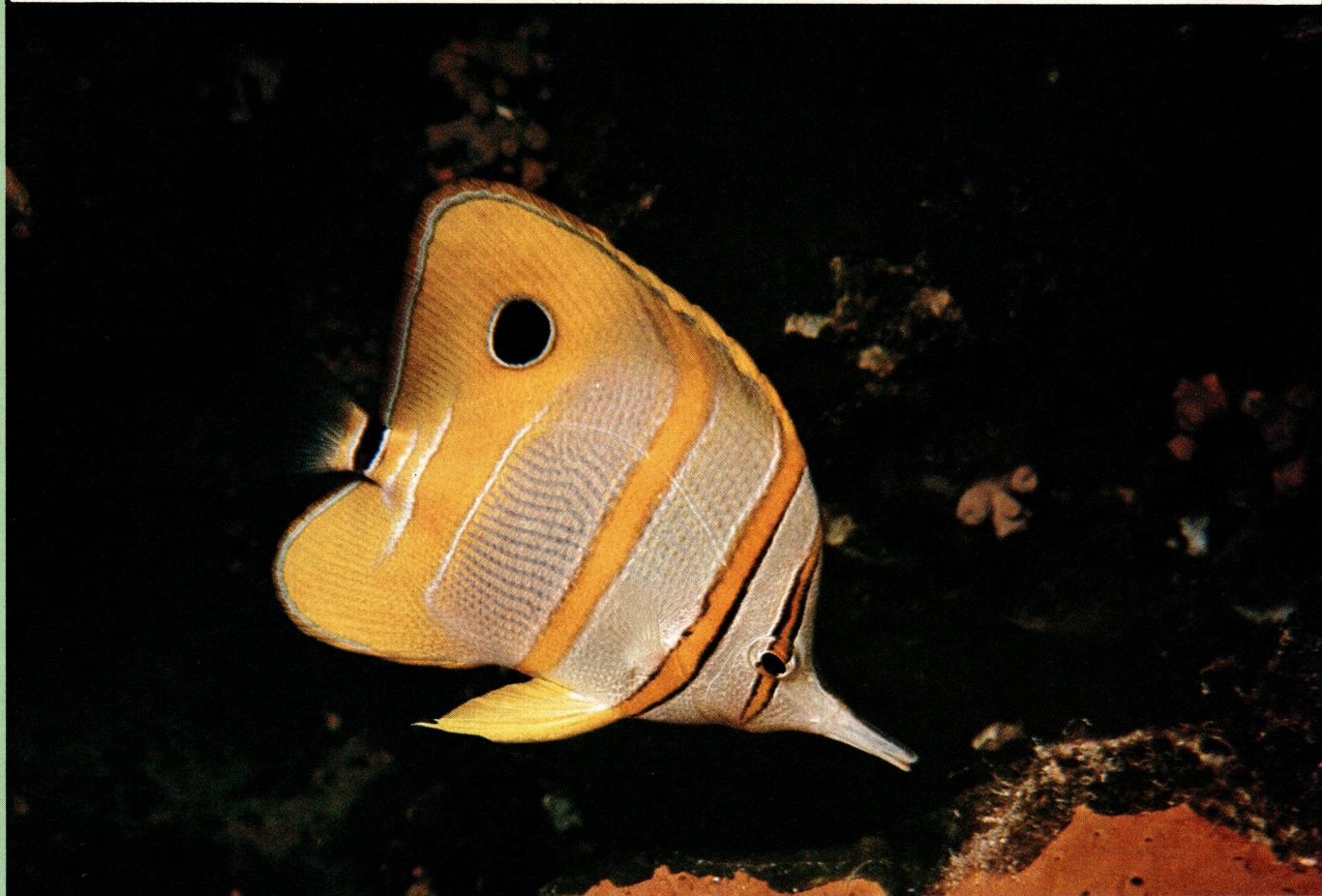
("Passport Nine" in Los Angeles), and from 1966-70 hosted the "Of Lands and Seas" series.

Craig is recognized as the first man to make natural color movies on the ocean floor and to show underwater color programs on television. His underwater pictures have won an Academy Award and received three nominations for the Emmy Award. Colonel Craig is the author of a best-seller and Literary Guild Book-of-the-Month selection, *Danger Is My Business*, and two other volumes: *Invitation to Diving*, published by Simon and Schuster, and a children's book, *Adventures of Robin Ray*.

"I have a wonderful sense of accomplishment when I look back at all of the things that have happened in my life in connection with the sea and with photography. I see these young fellows coming along with these new ideas and cameras and I applaud them because there's a great field out there. If there was ever a Go West Young Man today it's certainly in oceanography."

If there was ever a pioneer that blazed the trail so young men could take U/W pictures, it was John D. Craig. ➤

Ocean Gallery



BUTTERFLIES ARE FISH

"Perhaps what attracts me to marine animals more than anything else is their bright colors. For as long as I can remember, I have always loved colors and the sea is rich with them in every imaginable form and combination." Over a period of years, Douglas Faulkner has expressed this feeling about the sea in photographs. Some of his most beautiful are of butterflyfish such as those shown on these pages, which were captured on film while he was diving near the Palau Islands in the South Pacific and off Queensland, Australia.

Butterflyfish are associated with the coral reefs of tropical seas around the world. They are relatively small fish, often no longer than six to eight inches, and are strikingly marked. While adults tend to travel in pairs, juvenile butterflyfish are relatively solitary as they pick their way along the reefs in search of food. The name for the group seems appropriate, for these fish are very quick in their movements and flit about coral hummocks much like butterflies above a field of flowers.

Butterflyfish belong to the family Chaetodontidae, which also includes the angelfish. On a world-wide basis, there

are about 20 genera and between 180 and 200 species in the family. The largest genus is *Chaetodon*, a species found on virtually every tropical reef. Family characteristics include deep, disc-shaped bodies, small mouths and comb-like teeth (Chaetodontidae is derived from the Greek, meaning "bristle tooth" or "hair tooth.")

The steep head profile of the chaetodonts, often ending in an extended snout, is well adapted to picking up small invertebrates from cracks and crevices in rocks and coral. Adult feeding habits vary from one species to another. Certain of them are herbivorous, others eat sponges, worms and small crustaceans, some browse on living coral polyps, and still others are omnivorous. They are diurnal, when the sun sets they enter into a state of inactivity.

Young butterflyfish are almost exact replicas of the adult species with the exception that they usually have an extra spot on the soft part of the dorsal fin. Young sometimes pick parasites from other fish much like the true cleaning species of wrasse. Before they mature, some young butterflyfish will actually set up a cleaning station and develop a clientele of individual fish. >>>

Golden Longnose/*Chelmon rostratus*

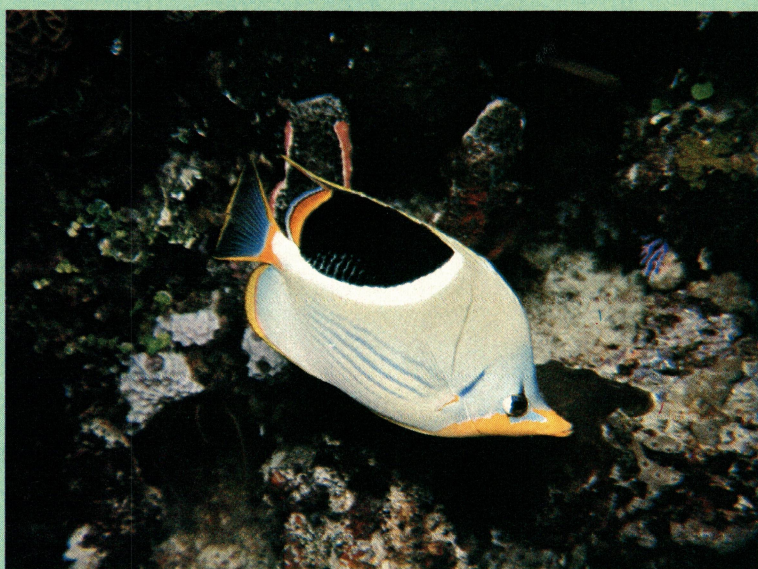


Bronze/*Coradion altivelis*

Convict/*Chaetodon octofasciatus*



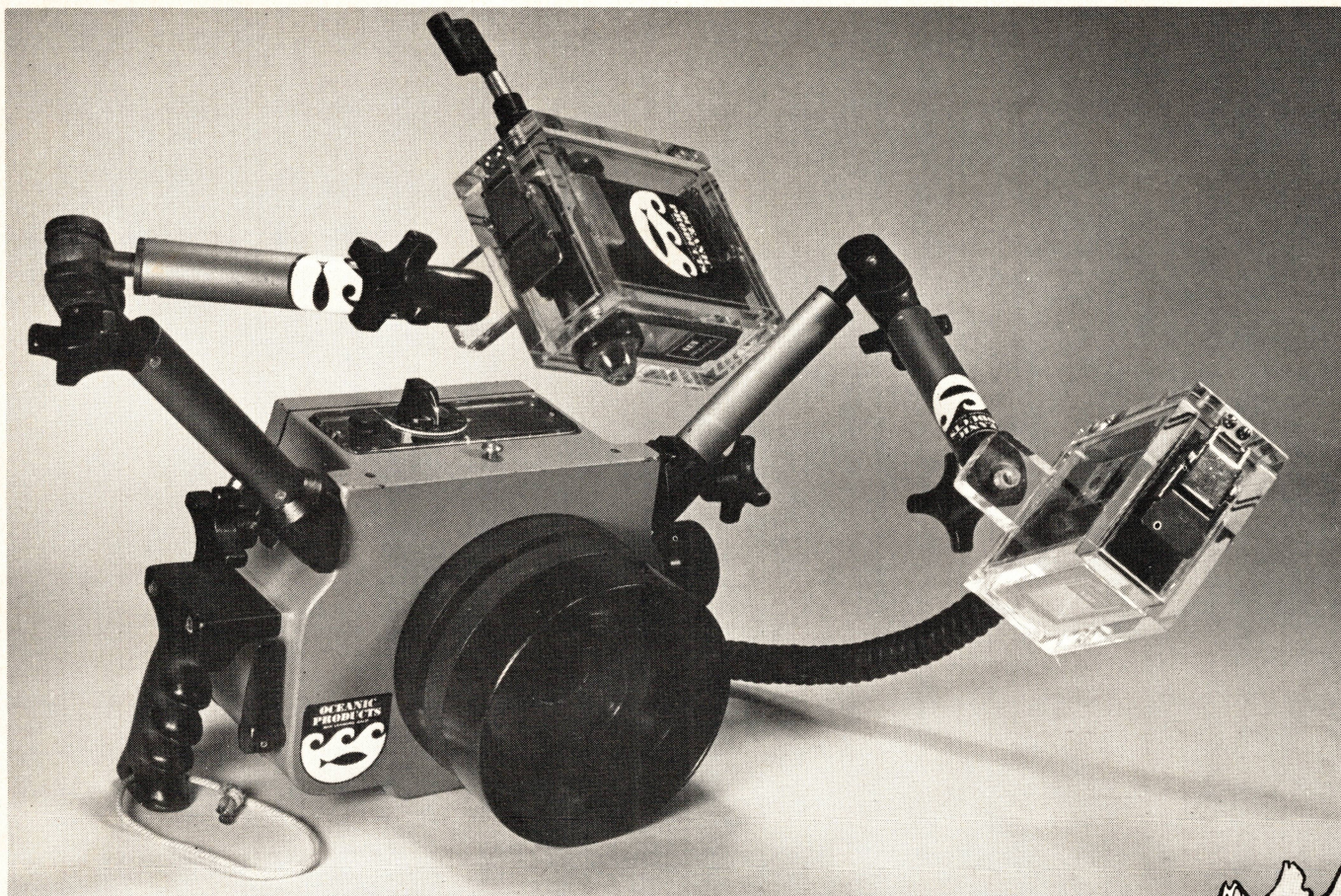
By Sherna Hough /Photography by Douglas Faulkner



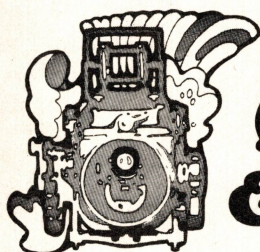
Saddleback/*Chaetodon ephippium*



Rainford's/*Chaetodon rainfordi*



photography by Authors



UNDERWATER
PHOTOGRAPHY

Quick & Easy

PART XXXVII

Multiple Strobe Lighting

By Jim and Cathy Church

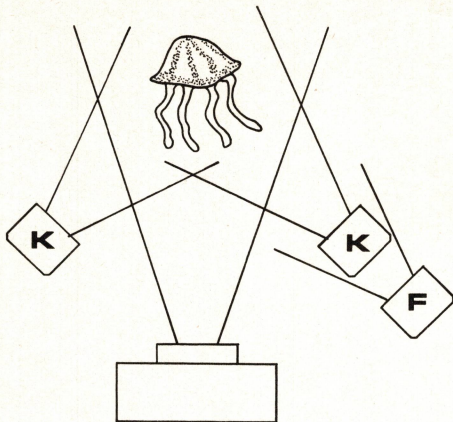
The purpose of this article is to introduce the idea of multiple strobe lighting — the use of two or more strobes to illuminate underwater subjects.

Begin With the Key — The main light source (or “key”) is the starting point because it provides the primary light for an exposure. In clear, shallow water, the main light will often be sunlight for camera-to-subject distances greater than about three apparent feet. For close-ups, the main light will usually be a strobe held close to the subject. Regardless of the source, the main light should come from a “natural” direction. We are accustomed to light that falls from above, and at an angle to the subject — the direction of sunlight outdoors, or light from overhead lamps when indoors. Thus, unless special effects are desired — such as silhouettes upward or through caves or tunnels, or strong sidelighting for building contrast — the key strobe will often be directed downward and inward at angles of about 45 degrees.

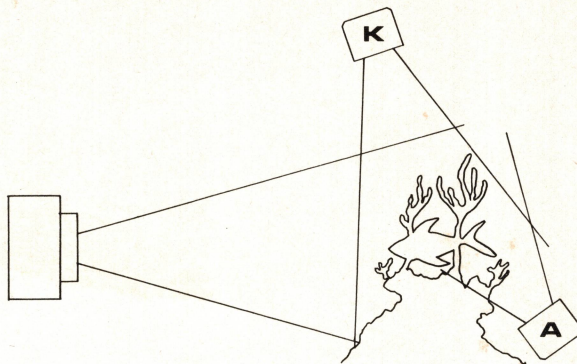
Add Some Fill — Add fill light to partially fill in the shadows created by the main light. The fill should be weaker than main lighting so it doesn’t create shadows of its own. (Our eye is accustomed to one set of shadows; additional shadows are often distracting.) If the key

strobe is attached to the left side of the camera, and aimed downward and inward, the fill strobe can be aimed in a similar manner from the right side. The light intensity from the fill strobe can be weakened by setting it for a lower power setting if adjustable, by moving the strobe further back from the subject, or by placing a neutral density filter over the lens of a housed strobe. Begin your experiments with a fill light that is about one f-stop weaker than the key light.

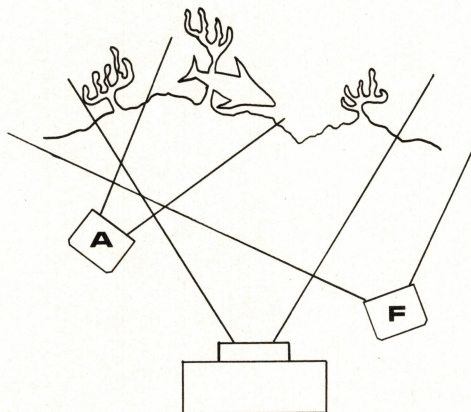
Accent Details — After the main and fill lighting have been established, accent lighting may be added to accentuate details — side or backlighting can separate subjects from backgrounds by rimlighting, and a strobe with a narrow beam angle can be used to pinpoint brightly colored fish. However, be careful not to overpower the main light determining exposure. When strobes are used for main and fill lighting, sunlight can be used for effective accent lighting. Upward silhouettes, with the sun behind the subject, will outline forms and surface textures while the strobes key and fill the subject areas facing the camera. Sunlight reflecting upward from light, sandy bottoms can be used for accent or fill, depending on subject and camera angle.



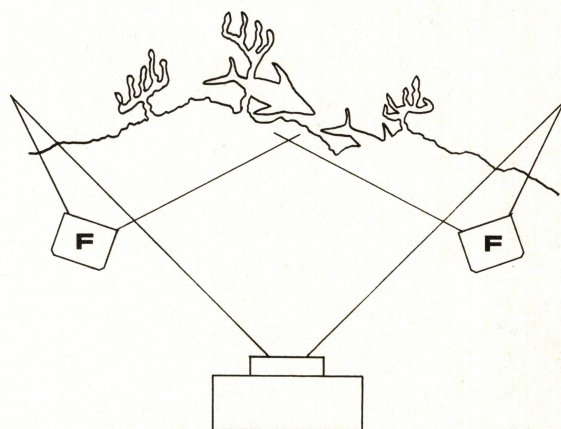
Example 1: The twin strobe setup maximizes subject illumination and minimizes shadow detail. Both strobes provide key lighting for close-ups (or fill at longer distances). There is no fill or accent lighting. Background depends on available light.



Example 2: The key strobe provides main light from above (a "natural" angle), and the second strobe is used mostly for accent and partially for fill. The backlighting accents the fine details in silhouette and the fill softens the shadow areas.



Example 3: This accent fill strobe combination is excellent for use with moderately wide-angle lenses in clear, bright tropical water. Sunlight provides both main and background lighting. One strobe accents. The fill strobe is used to soften shadows, restore color.



Example 4: Although similar to example 1, the purpose of the twin strobes is to distribute light evenly over the large picture area photographed with extreme wide-angle lenses. The strobes provide key light at close and fill at medium and long distances.

Watch the Background — Background light is tricky because you often can't control it. Concentrate on selecting backgrounds that have the lighting characteristics that will enhance the near subject being photographed. This is most important when using cameras with focal-plane shutters that limit the shutter speed to 1/60-second when used with strobes. With an iris shutter, the background can sometimes be lightened or darkened by decreasing or increasing the shutter speed. With reflex cameras, cluttered backgrounds that will distract from the main subject may not be sharply defined on the ground-glass viewing screen. Thus, the effect of the background may not be apparent when the camera is being focused on subjects a short distance away.

Setting Exposure — Exposure is usually dictated by the main light source. If this light source is sunlight, use an exposure meter; if strobe, base calculations on the key strobe. As a rule of thumb, divide the above water guide number by twice the number of apparent feet in the total light path (from strobe to subject to camera). We use the total light path because light is absorbed, and blocked or scattered by suspended particles, during its entire journey through the water. With two key

strobes lighting the same subject area with equal intensity, try multiplying the guide number by 1.4 before dividing. For three strobes, multiply by 1.7.

Equipment — Only one strobe will be connected directly to the camera; others will be activated by "slave sensors" built in or attached to the strobe. The Subsea Products (Box 9532, San Diego, Calif. 92109) Mark 150, and Giddings/Felgen (578 Fourth Street, San Francisco, Calif. 94107) Sea Star III are both wide-beam angle, submersible strobes with built-in slave units. Oceanic Products (814 Castro St., San Leandro, Calif. 94577) can supply optical wideners with their Hydrostrobe housings, adjustable flash arms, and can modify a Wein Micro-Slave so it will screw into the flat surface (via a drilled, tapped hole) of any strobe housing. The Ikelite housing (3301 N. Illinois St., Indianapolis, Indiana 46208) will accommodate any Strobosnar model numbered 600 or higher, with a Wein Micro-Slave inserted, without modification. Sea Research & Development (Box 589, Bartow, Florida 33830) can provide a slave sensor that attaches to a strobe housing with a Sea Link connector. Write to these companies, or stop by your local dive shop where the equipment may be on display. ➤

Only 9



For A Friend

By Edward M. Brady

There are times when a professional diver will accept risks, but those occasions are few and far between. He only takes risks when they are unavoidable and necessary for the completion of his job — seldom for money alone. As an example, the following story points out a few calculated diving risks undertaken for personal reasons which never would have been considered strictly for money.

An oil tanker enroute to Texas received a weather report while off the Florida coast indicating stormy weather in the Gulf of Mexico. Tank cleaning operations having been completed, men were assigned to wash down the forward pump room using hoses and hot sea water. After working for two hours the men took a coffee break, leaving a wash water hose running and bilge pump operating. The bilge pump suction clogged when a rag lodged in its suction valve body, however, and the bilges started filling as hot water continued to flow unabated.

Had the men returned immediately after the coffee break, the chances are the failure would have been discovered in time. But the men were delayed in their return as they were called to secure and lash machinery for the expected heavy weather. The delay was long enough to allow partial flooding of the forward pump room so that when they did finally arrive, there was little to do but shut off the hot wash water and notify the Chief Engineer.

During lunch the First Assistant Engineer heard of the trouble for the first time. Knowing the Chief was in trouble, he asked if there was a way the water could be removed without operating the bilge pump. The Chief said, "Yes, but the cover of the bilge pump suction strainer's got to be taken off so the water can drain into the cofferdam next to the pump room. There's no way to get the cover off the suction strainer — it's bolted and too far underwater."

"Chief, I was a diver in the Navy. Well . . . trained for diving, anyway. I think I can take that cover off if there's a diving rig aboard," volunteered the First. "Do you have one?"

"No. Just a fresh air breathing apparatus to enter gassy tanks. It has a mask of sorts. You couldn't use that, could you?"

"Don't think so, but maybe there's some way we can convert it for diving. How deep is the water? How deep must I dive?"

"Not deeper than 15 or 20 feet, I reckon," hope flickering amid the aura of disappointment.

"I'll give it a try, Chief," the First declared. He hoped there was some way he could help the old man. "Gentlemen of his caliber are hard to come by in this game," he thought. He knew all other methods of draining the pump room had failed, and that if he couldn't make the dive, a portable pump would have to be called upon the vessel's arrival in port. The Chief Engineer didn't want to call in a pump because of the expense involved, however — to say nothing of incurring the displeasure and reprimands of company officials.

"Chief, how about hooking up the air hose to the ship's service air line? We can get around 100 pounds of pressure, more than we'll ever need."

"Can't! Different threads . . . but, wait a minute. I could machine a coupling adapter!" The Chief went below to the engine room, to emerge about an hour later with the coupling connected between the air hose and the air line.

"What about an air filter?" the Chief asked. "Don't we need one to filter out oil fumes coming from the compressor?"

"Normally we would, Chief, but I'm going to take a chance without one since the compressor is so far away." (It was approximately 450 feet.) "I think most of the fumes will condense or deposit on the long length of supply piping before they reach this far."

"About where is the strainer cover, Chief?" The water, dark and impenetrable looking, was fouled by oil floating and in suspension.

The Chief lowered a canvas tool bag into the black. "About there, I reckon. Should be right on, or alongside, the strainer."

The First donned the mask, then eased himself into the water and grunted with surprise. It was hot! Operating the submerged steam bilge pump had served only to keep the wash water hot. He descended into total darkness, bumping steel railings, brackets and piping, all the while trying to remember his way past each obstruction in case he had to escape without air hose and mask. Groping around in pitch darkness he finally felt the top of the steam bilge pump. On down he went alongside the pump to the lower casing . . . then to the right . . . "It should be somewhere near here," he thought.

Unexpectedly he found the bag of tools, but for all of his groping he found no sign of the strainer. Another five minutes of feeling around made him frustrated and drained of energy. He dropped the heavy flange, which he had been using instead of a weight belt, and kept himself down by hanging onto pipes with his legs. He continued the search using his free hand. "Still no strainer," he thought. "Where the heck is it?" The hot water was becoming unbearable . . . sweat flooded his face . . . it felt as though he were slowly cooking . . . his arms and legs ached.

"Damn! Where is that strainer?" he fairly shouted. The heat proved too much. He slowly searched his way out. As he ascended his elbow banged against a ladder railing and jarred the mask from his face. Frantically, he caught at the unseen mask, lost it for a few seconds, found it and pulled it to his face desperately fighting panic. He blew out trapped water as best he could and continued the slow ascent. Oil covered his mask as he broke the surface so he couldn't see the eager hands that pulled him from the water. His oil covered body prickled with the pain of heat.

They all lost no time in going topside for a breath of fresh air. The long climb out of the pump room seemed almost as exhausting as the dive. All hands dropped limply to the deck under the open sky. The

(Continued on Page 37)

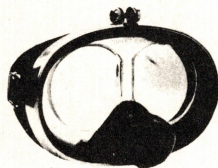
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Bag constructed to carry all the diving extras: mask, snorkel, fins, etc. Handle locking grip device.



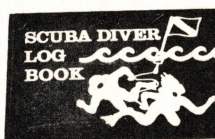
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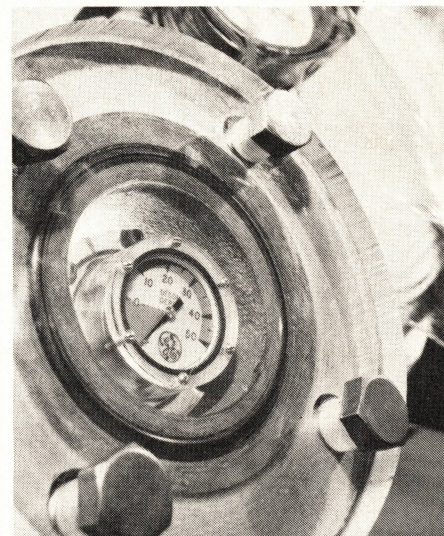


LOG BOOK

Take SCUBA lessons from a professional Diving School.

AUTOMATIC DECOM METER

Drs. Marcus Borom and Lyman Johnson, both full-time General Electric scientists with a part-time yen for diving, have invented a new automatic decompression meter to help divers avoid the bends. "The problem, really, was to find the correct mathematical analog for precise calculation of the Navy decompression schedules," the GE inventors said. "We found it."



The unique feature of the GE meter is the use of thin silicone rubber membranes which allow air to pass through at controlled rates simulating a diver's body tissues absorbing and releasing nitrogen. As water pressure increases during a dive an air pocket, which stays at ambient pressure, is forced against these membranes and air diffuses through them.

The membranes are stretched across four different sized air chambers which simulate the different absorption rates of various body tissues, such as those found in muscle, fat or cartilage. The meter automatically measures the air pressure inside each of the four chambers, and registers the highest pressure on its dial face. This action indicates the decompression schedule, showing the depth at which the decompression stops should be made.

The handmade prototype of the meter is about two inches high by two and three quarters inches in diameter. The GE inventors believe, however, that additional design will reduce the size by half. They estimate a production model could be made to sell competitively for about \$100.

The new automatic decompression meter is not yet available commercially. A GE spokesman explained that "General Electric does not make consumer-type underwater gear, and thus is planning to license patents covering the device to other firms." GE's Technology Marketing Operation is discussing license agreements with several manufacturers.

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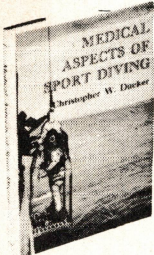
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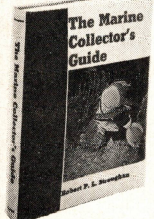


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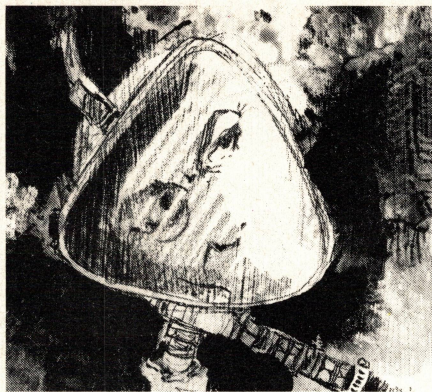
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ONLY FOR A FRIEND

(Continued from Page 35)



First had thought he alone was overheated, but he could see then that the clothes of the others attending were wringing wet with sweat. The warm night air felt cool and sweet to taste after the steamy and hot foul air of the pump room.

"Guess we'll call it a day," said the Chief, trying hard to hide his disappointment.

"No, Chief! Let me catch my breath and I'll try again. Are you sure the bag is near the strainer? I've searched all around that area."

"That bag should be right within a few feet of the strainer, if not right on top."

A sudden thought flashed in the First's brain. He could hardly suppress his excitement. "O.K.! I'm ready! Let's give it one more try." The reluctant crew trailed him down the slippery ladders and he eased into the water a second time. He made directly for the bag of tools at the end of its lowering line, lifted the bag, and saw the strainer under it. After several fittings he found a wrench to fit and slowly backed off all the nuts with one hand while holding the face mask on with the other.

Suddenly, after several minutes work, the cover popped off releasing a large air bubble trapped in the strainer. The air blew the heavy cover into his face knocking the mask off. He didn't try to find the mask and dropped the crow bar while starting a free ascent past all obstructions with one arm extended over his head to ward off injuries. With eyes closed to keep out oil, he passed through the concentrations of oil that lay on the surface.

Eager hands reached to pull him from the water. Men on the ladder in water up to their waists caught him with a reassuring firmness and lifted him out of the water. All the while he was aware of a rousing cheer voiced from the many smiling faces. They had seen the air bubble and commotion in the water and knew

that the cover had finally been taken off, but they feared for his safety when the mask came up empty.

As the water level rapidly dropped they made their way topside where the Chief grabbed the First's hand, pumping it hard all the while pounding his back. "You did it! You did it! I was sure worried about you the last ten minutes you were down, and if I could have brought you up, I sure would have and said to hell with the strainer! But, you did it!"

Yes, it was done, but there were many risks involved — certainly there were risks far greater than any novice should take. They were calculated risks, though, and the First had a reasoned response to each of them that either nullified or minimized them. He decided to take the risks for personal reasons, best stated by the parting conversation between the Chief Engineer and his First Assistant Engineer before they retired.

"I want you to write enough overtime to cover that dive . . . whatever it costs."

"Chief, that's one dive I would never do just for money."

"Then what do you want? Just name it!"

"I've already got what I want, sir. I'd only make a dive like that for a friend."

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THE GOLDMASTER AMPHIBIA

There's gold in them thar waters!

I don't know exactly who said that (it was probably Dick Anderson), but whoever it was, was right. It is estimated that one third of the world's total minted wealth lies in sunken wrecks from Jamaica to Cyprus; off the coast of Africa to the Philippines. There's a good share of it in the Great Lakes, too. And the way they're bringing the stuff up in the Bahamas and off Florida, that one third is rapidly dwindling toward the one quarter mark.

Gold fever is an insidious thing. I've seen the strongest of men succumb to its enrapturing powers. In a trance-like state, with glassy eyes and beads of perspiration filling up the inside of their diving masks, such old timers as Paul Tzimoulis and Joe MacInnis have spent an entire day sifting through rubble on a California shipwreck in search of gold coins. And I was right alongside of them. . . .

Now it's even easier for divers to fall under the spell because they can take down a Goldmaster model BF-8 underwater metal detector to search for some of that lost gold. The Goldmaster BF-8 is a compact, simple to operate, battery powered unit which can be used to depths of 400 feet in fresh or salt water. It can be used to locate all kinds of metals, and can be used with three different sized loops for varying targets. And it is not limited to use underwater: by attaching the land probe, it can be converted to a topside metal detector.

The Goldmaster BF-8 is an all-transistorized unit, crystal controlled by a genuine Brazilian quartz crystal with gold plated electrodes. The unit is powered by a single nine volt battery which, along with the rest of the electronic components, is housed in a plastic, hand held case. On the back of the case is a knob that can be set to null, metal or mineral.

By turning the knob to the metal setting, the instrument will detect gold, silver, platinum, bronze, brass and other non-ferrous metals. The mineral (magnetic) setting will detect ferrous metals such as magnetite, a very heavy stone often used for ballast in old sailing vessels. Old Spanish galleons almost always carried ballast stone of this type, so getting a reading on a shallow coral reef with a Goldmaster may be a strong indication that the diver is on top of a genuine Spanish treasure galleon.

The Goldmaster works on an audio principle rather than a visual one. The advantage of this is readily apparent at low light levels or in dirty water. But even in clear water it's an advantage because one can visually sweep ahead and keep track of a diving buddy instead of keeping both eyes riveted to a small indicator needle. Radio waves are transmitted from the instrument and penetrate coral, mud, gravel, sand and even wooden planks, and will indicate the presence of a metal object even if it is no larger than a single coin or ring. Earphones are worn which may be bought already installed in either a wet suit hood or in a neoprene band that fits around the diver's head and under his chin.

After attaching the housing to one of three plexiglass loops (12, 18 or 24 inches) and locking the earphone cable into the waterproof connection at the rear of the housing, the unit is ready to work. The control knob is slowly revolved to either the mineral or metal setting until a sound, reminiscent of motor boating, starts coming over the earphone. When the loop passes close to any metal object the frequency (speed) of the beat will in-

crease. It will continue to pick up frequency the closer it is moved to the metal object. When it is moved away it will begin to slow down.

Penetration capabilities of the unit depend on the size of the object being looked for and the size of the loop being used. If one were searching for a tiny object about the size of a coin it would be best to utilize the smallest loop available because the resolution is better. On the other hand, if one were searching for deeper or larger objects, it would be best to use the larger loops because they cover more area. The larger loop spreads the field out while the smaller loop concentrates the radio waves into a smaller area. With a larger object, such as a gold bar, the smaller loop might detect it at a depth of 18 inches while the 24 inch loop might detect it to two feet.

Using a metal detector successfully is analogous to driving the world's fastest race car — put an amateur in the driver's seat and chances are the car won't win the race, but let a pro take the wheel and he'll leave the others far behind. It's important to get the feel of the detector by practicing with it first. Plant a few coins and other metal objects under sand or gravel and learn how to "hear" them. It's important, for instance, to maintain the same altitude above the bottom, because if the bottom has a high mineral content, the speed of beats will gradually change when the detector is moved up or down. An inexperienced operator might misinterpret this as a find, but an old hand will only get excited when the beats change with a steady, horizontal movement over the bottom.

Generally, a good rule of thumb to remember is: The distance you can detect an object in air will be about the same distance you can detect the object when it is buried. Keep in mind that the higher the mineral content of the ground or bottom, the more difficult it will be to recognize the find. This is where experience comes in. In some cases a better reading will be possible if the object has been in the ground for a long time because ferrous metals tend to oxidize and spread out making the ground conductive which represents a bigger target for the instrument. A large metal box buried under four feet of sand is just about on the outer limits of sensitivity capabilities.

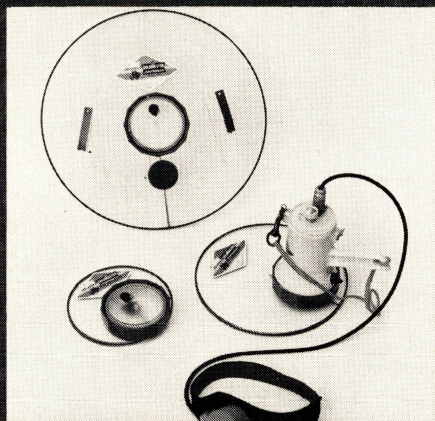
I tested the Goldmaster BF-8 at Anacapa Island with my friend Dr. Jesse Garber by burying my knife in the sand and sweeping the area until I located it. As the hood of my wet suit is attached to my jacket, I used the neoprene band with earphone that fits over the head and under the chin. Even through my hood I could distinctly hear the motor boat sound, which noticeably picked up in frequency when I passed the unit over my knife. Again, I'd like to emphasize the importance of maintaining the correct altitude over the bottom with the detector. I found that the best distance seemed to be around three to four inches.

If you want to have fun, get glassy-eyed and possibly rich too, by scouring the bottom of your favorite diving spot, you might consider getting a Goldmaster underwater metal detector. The cost of the total system is: Goldmaster BF-8—\$199.50; 12 inch loop—\$59.50; 18 inch loop—\$69.50; 24 inch loop—\$79.50; land probe—\$79.50; plexiglass adapter (to be used with the land probe)—\$10.00; U/W headphone (hood)—\$29.50; U/W headphone (strap)—\$19.50; stereo headphone for land use—\$19.50. For more information write to White's Electronics, 1011 Pleasant Valley Road, Sweet Home, Oregon 97386.

N MODEL BF-8 METAL DETECTOR

An Exclusive SDM
Product Report

By Jack McKenney



photography by Author





TORFU

By Sherna Hough

The artists' media of watercolor has never been more appropriately used than in the paintings of Torsten Furumo. The art director for an advertising agency in Denver, Colorado, Tor spends much of his spare time cruising underwater for scenes to remember and later record on paper. In his eight years as an active diver, he has had the opportunity to travel to a number of exotic diving areas and has produced over 200 underwater pictures.

"Diving . . . and a new world of art began for me in 1966 when, on an impulse, I took scuba lessons in

Denver, Colorado. The first open water dive was in Jefferson Lake at 10,000 feet elevation and that ice cold water was an inspiration to head south as soon as possible. Jamaica in early 1967 was the real beginning of an obsession to be in and show the undersea world.

"That mass of intricate detail and color registered on the eye of the diver leaves some sort of a mood which the diver remembers," says Tor. "This is the mood I try to portray." But to capture this mood requires concentration on simplification of visual impressions. The artist

underwater artist



RUM



will use yellow as a background to give a feeling of hovering over sand, for instance, or exaggerate the predominant color of a fish which lingers in his memory.

The pictures are not painted underwater, but in his studio from sketches and notes that he makes after every dive. He gets himself fired up, then has a spurt of activity during which he may complete 10 or 15 paintings in a two week session. Once painting is started the subconscious seems to take over and the end effect sometimes is as much a surprise to him as to anyone, he says.

He thinks out each painting in advance, however, deciding which mood of an area will be captured in each work.

Tor's actual painting is done in several steps. The start is a totally wet board with watercolors flowed into position. The board is left to dry completely, then "schools" of fish and coral simulations are painted in with an artist's airbrush. The last step, on some of the paintings, is to do a realistic fish or coral group using acrylics. The technique is sort of a hybrid affair which the artist smilingly calls "Underwatercolors." >>>

News Briefs



ATLANTIS SUIT

The hunt for Atlantis by Pepperdine College (L.A. Calif.) students (NB, Nov. '73) has now turned into a \$1 million lawsuit against the expedition leaders, Mrs. Maxine Asher and Dr. Julian Nava. The two were formerly co-directors of the Ancient Mediterranean Research Assn. (Dr. Julian Nava, well-known educator and member of the L.A. Board of Education, quit the expedition early in the game, stating that group leaders were more "psychic" than rational.) The suit was filed by a father and son who had said they lost more than \$45,000 invested in a proposed film documenting the search. John D. Couturie, a Hughes Aircraft Co. executive, and his son, William, a cinematographer, have asked for \$1 million damages. Mrs. Asher still maintains that her group did find Atlantis off Cadiz, Spain, but that participating student/divers for some reason are denying her assertions.

HELP FROM SEA

Scientists are experimenting constantly with sea animals to isolate their medicinal values to man. Researchers at the Natl. Institute of Health, Bethesda, Md., have found that juices and meat of oysters, abalone, clams and other mollusks "contain a rich source of a substance that destroys disease germs." Specifically, the mollusk substance was found to reduce death and paralysis from polio virus by about 25%. Also hit hard by the mollusks were influenza, cold sore and staphylococcus bacterial viruses. Also,



At 720 feet, four divers have a snack between rapid compression tests. Left to right: Erik Geerts, Dr. David Youngblood, Chris Swann and Jeff Prentice.

DIVERS TEST GAS MIXES, COMPRESSION RATES AT 720 FT.

There are definite advantages to using tri-mix (oxygen-nitrogen-helium) over heliox (helium-oxygen) in deep dives involving rapid compression. Thus were the findings made on August 28 and September 5 during simulated dives to 720 feet at Duke U., North Carolina. Researchers found that the narcotic effects of nitrogen at depth (nitrogen narcosis) are actually cancelled out by helium, while dizziness, nausea and tremors caused by helium (high pressure nervous syndrome, or HPNS), are cancelled out by nitrogen.

Four divers, Chris Swann, Dr. David Youngblood, Jeff Prentice (of Harbor Branch Foundation, Florida), and Erik Geerts (of Oceaneering Intl.) took part in the tests, under the direction of Dr. Peter Bennett, Duke U. On August 28 they went to 720 feet using the tri-mix (helium 73.52 percent, nitrogen 24.1 percent and oxygen 2.38 percent) to test the proper balance between nitrogen, which acts as a depressant, and helium, which in rapid compression dives induces HPNS. (This is a serious problem because in many cases, especially offshore work where short bottom times are essential, slow compression is impractical.) After the tri-mix dives, the divers showed negligible HPNS. In the heliox dive, however, all divers showed HPNS below 500 feet; the divers reported clear thoughts but severe nausea and tremors.

Duke U. has planned two 1000 foot dives to compare the two gas mixtures. For the first dive (tri-mix), the compression rate will be 50 feet per minute (reaching bottom in 20 minutes), which reportedly will be fastest compression ever made to that depth.

a Woods Hole scientist has found that clams fed to mice with cancer checked cancer growth measurably.

Meanwhile, Dr. Findlay E. Russell of the Los Angeles County General Hospital has found that the venom found in the barb of the common stingray (*Dasyatis say*) contains a hypotensive agent "capable of lowering blood pressure in humans."

DIGITAL SPEECH

The difficulties in communication with divers below 600 feet may be worked out with a new device developed by Marconi Space and Defense Systems Ltd. The system analyzes each sound "digitally" and reconstructs the significant portion of speech at a slower rate, making divers' speech intelligible. The communications device is being sold to the United States Navy.

SNAKES!

"Watch out for snakes in the water," says a former Florida orthopedic surgeon. Dr. Newton McCollough says, "They're good swimmers that can and do bite humans taking part in water sports." In Florida, snakes such as the coral snake, moccasin and rattlesnake will climb docks and ladders and are often found in shallow water where they prey on small animals. However, a snake is usually not prepared to bite a human and one study has indicated that the delivery of snake venom to man is often ineffective. In any case, first aid treatment includes immobilizing the patient, cutting under the fang puncture, some method of suction, and getting quick medical help.

ATOCHA—IS IT OR ISN'T IT?

Florida marine archaeologist and diver Bob Marx says that the recent *Atocha* "find" made in Florida by Treasure Salvors, Inc. (NB Oct. '73), is not really the *Atocha* at all and that the real wreck is at least 100 miles away from the declared wreck site. He's looking for it himself. Marx also disclosed in a recent *Argosy* Magazine feature that the alleged \$400 million on board the wreck is way out in left field, that the artifacts and treasure on the wreck had about \$1½ million in actual value, or between \$8-10 million in historic value.



Bob Marx: "I'm looking for the *Atocha* myself . . ."

SEA LION LOSS

Insecticides are thinning sea lion populations off California as they have bird species, according to three California scientists. William G. Gilmartin and John G. Simpson, Naval Undersea Center, San Diego, and Robert L. DeLong of UC Berkeley's School of Wildlife and Fisheries, say that insecticides (DDT, dieldrin and PCBs) are causing the premature births of sea lion pups. They found higher concentrations of the chemicals in liver, blubber and brain tissue in premature pups and mothers than in normal term babies. They counted 242 dead pups on San Miguel Island in April, 1970, and 348 a year later.

HELP FOR WHALES

Harassment of gray whales by California whale watching boats may curb such cruises. Investigation by National Marine Fisheries is currently under way. Meanwhile, Athelstan Spilhaus has called the whale the "ocean's most marvelous machine for utilizing protein," and suggests whale farming to relieve pressure on natural populations.

GILL NET BAN

Michigan's Dept. of Natural Resources has proposed a statewide ban on the use of gill nets in Michigan waters. According to O'Brien John Doyle, Jr., Joint Committee on Administrative Rules, the DNR is planting lake trout and whitefish in the productive spawning areas of northern Lake Michigan as part of the Great Lakes Restoration Program, and it is believed that the use of gill nets defeats the purpose of the program. Doyle welcomes comments from SDM readers, sent to the committee at the State Capitol in Lansing.

LOBSTER THEFTS

Divers have reportedly been stealing lobsters from commercial traps off the Florida Keys and some fishermen are plenty mad. George Cooper of Angelo's Seafood, Inc. in Marathon says that last year was particularly bad for poaching and that the worst part of it was that the divers just tore up the traps — buoys, ropes and all. Capt. Ed Little of the Florida Marine Patrol fears violence if the fishermen catch the trap robbers. However, some people in the seafood industry think that perhaps the fishermen are simply blaming poachers for the season's poor catches.

AUSTRALIAN DEATHS

Diving in Australian sinkholes may be a thing of the past, or will at least be regulated, following the deaths of four scuba instructors in an underground limestone cave called the Shaft near Mt. Gambier. Seven divers have died in the sinkhole in the past 12 months.

CYCLOPS FOUND?

A retired Navy diver says that he has possibly found the *Cyclops*, a Navy fuel ship which mysteriously disappeared off Virginia in March of 1918. (At the time it disappeared it was speculated that it had either been sunk by a German sub, captured by the Germans, or that it had hit a mine.) The diver, Dave Hawes, says that he found the sunken vessel in 1969 but had not mentioned it until recently. Hawes claims that the sunken ship matches the description of the block-long *Cyclops* and lies 70 miles off the coast. Even though Hawes' disclosure is considered "rather belated," the Navy has found it interesting enough to send a salvage ship *Kittiwake* to investigate.

ODDS & ENDS . . .

Newton Divers (Mass.) recently found two vintage ice wagons in Crystal Lake. According to club member Gary Rayberg, the wagons sank between 1915 and 1925 and are now on display at the Jackson Homestead Museum near Boston . . . Calif. State Fish & Game Commission is recommending a plan to permit fish filleting aboard charter boats (state law now prohibits bringing in a fish upon which there is a size and weight limit in a condition that size and weight cannot be determined . . . Anti-shark nets off Australia's public beaches have reduced shark attacks by almost 100 percent since they were installed off New South Wales in 1937. Last year 113 sharks were meshed off Sydney beaches . . . An U/W recovery team has been formed in New York. Onondaga County volunteer firemen recently completed a 34 hour advanced diving course aimed at search, rescue and recovery techniques.

URCHINS—ONE MAN'S MEAT, ANOTHER'S PROFIT

To many American divers the sea urchin is still considered nothing but a menace. To the Japanese, however, the urchin, or *uni*, is an expensive delicacy, a golden caviar. California marine ecologists favor the removal of urchins because of their devastating effect on kelp and subsequent effect on marine life. The result: a sea urchin industry which is now building in California coastal towns, most notably Santa Barbara, where commercial abalone divers are supplementing their incomes with the urchin. A sea urchin company in Santa Barbara, called World Business, is exporting the roe to Japan at the rate of 20,000 sea urchins on a good day (each sea urchin averaging a pound each). The abalone is still a better paying proposition, but more and more divers are getting into the urchin act, and the Japanese are extremely happy about the whole thing. Says the chief operator of the World Business processing plant: "You mention Santa Barbara in Japan, people nod their heads, smile and say 'Santa Barbara. Ah! Uni!'"

ANDREA DORIA CAPER

Treasure Vault Finally Opened

By Jack McKenney

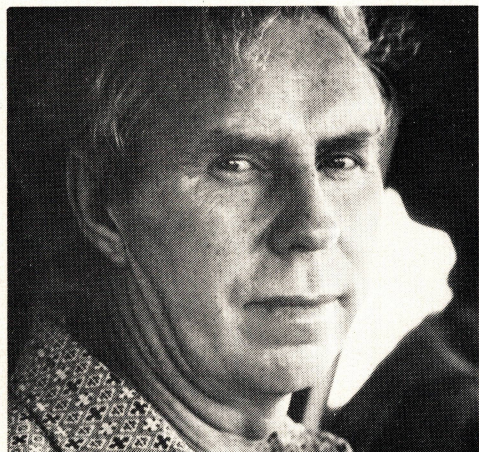


Glowing bits of phosphorescence leaped from the wire cable as Bob Hollis and I made our descent. It was night — about 8:45 p.m. — and we were making a dive to the *Andrea Doria*, 240 feet beneath the cold North Atlantic. Our dive would be to the hull at a depth of 160 feet. Absurd? That's what we thought, but it seemed doubly so because slung under one arm each was a 65 pound transfer capsule containing hot meals, clothing, and a canister of CO₂ absorbent. The capsule had to be taken down to Don Rodocker and Chris DeLucchi, who were saturated inside a habitat which was secured to the *Doria's* 700 foot long hull.

At the surface, when Bob and I had agreed to make the delivery, we had been told the pot weighed less than four pounds in water. However, when it was handed to me over the side of our 13 foot dory tender, it was a different story. It was a good thing I had a firm grip on the boat or I would have rocketed to the bottom. I handed the pot back to the



the divers involved in the operation



Captain Jack Jacobson



Lieutenant Don Gay



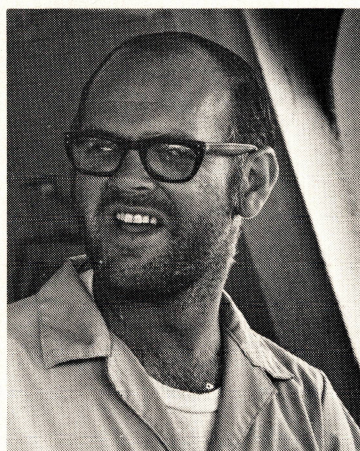
Master Diver George Powell



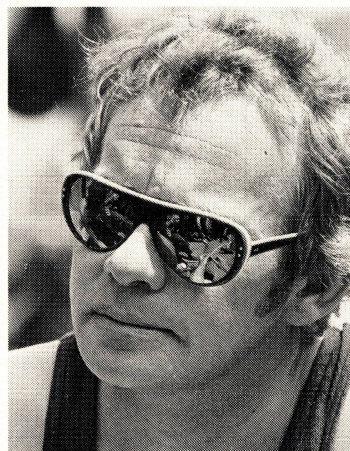
John Clark



Gary Gayda



Doctor Don McMillan



Film Producer Bob Hollis



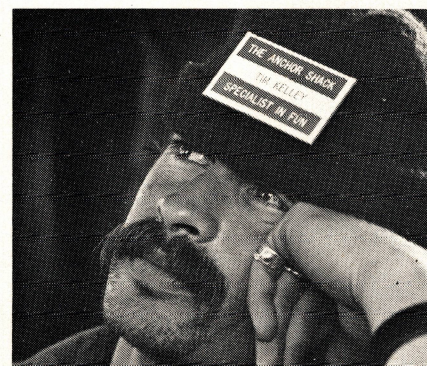
Bernie Campoli



Jack McKenney



Tom Ingersoll



Tim Kelley

photographs by Bernie Campoli, John Clark, Author

dive tender and Bob and I had a quick in-water conference. We decided to each hook one arm under the rope on the pot, blow our Fenzy vests, and work it down the anchor line that way. I also carried a large coil of rope over my other arm, and a light.

As we descended along the cable, I could hear Bob yell into his mouthpiece, "turn on the light." I did, but the phosphorescence disappeared in the white stabbing shaft, so I turned it off.

"Turn on the light!" It was getting spooky so I turned it on and left it on. The narrow beam illuminated the bouncing cable which moored the 85 foot fishing trawler *Narragansett*, and life support system at the surface, to the *Doria*. A five foot diameter metal buffer buoy, "Big George," connected the anchor cable to the *Narragansett* with a one and a half inch polypropylene line. Down we sank, bubbles rasping back past our heads, our arms straining under the heavy load and blackness all around us. Hundreds of schooling fish darted in and out of our narrow light beams.

At 140 feet, the gigantic boat davit on the port side of the *Doria* took shape in the glow of my light. The plan was to secure the line to the davit and swim it over to the habitat, which was stationed about 30 feet from the moor. We'd use the line as a guide between the anchor cable and the habitat, which we had nicknamed *Mother*. Visibility with the hand lights was 20 feet and from our position we weren't able to see *Mother's* white bulbous shape. To get from the boat davit over to the habitat, it was necessary to cross over the promenade deck and swim parallel along the hull.

We placed the transfer pot in a crook of the boat davit. A slight current was running. I handed the line to Bob, who apparently didn't realize that I was giving it to him so the line drifted off in the blackness. We shined our lights down over the deck of the *Doria*. Large hake sluggishly milled around in the shimmering torchlight. There were fish everywhere — but no sign of the rope. "What now?" I thought. Bob motioned for me to remain with the pot and swam over to the hull where he spotted another line from a previous dive.

I was ten feet from Bob, holding my light on his hands so he could see what he was doing. He grabbed the 30 foot line four feet from the end, which traced behind him, but then started to reel in the long end. It was exasperating to watch him pull in 26 feet of line when all he had to do was reach down four feet and have it. "He's as narced as I am," I thought. After what seemed like ten minutes Bob swam over to me, secured the line to the cable, and then swam over to *Mother* with the other end.

I waited on the davit. It was cold and I was getting nervous about the slight current that had begun to pick up. I shined my light off into open water. We had seen sharks on the hull of the wreck just a few days prior. This great artificial reef was a favorite feeding ground for the big blues that cruise these waters. I clung to the transfer capsule. If it slipped out of my hands it would plummet down along the deck and perhaps fall into some dark hole. How would I explain that? I turned off my light to see how dark it would be. It was pitch black, so I quickly turned it on. Bob materialized at my side moments later.

We hoisted up the heavy pot and started to hopscotch it across the promenade deck to the hull. It seemed as

though there were numerous black openings just waiting to swallow us up. I had visions of dropping the heavy container down through the promenade deck and of it continuing on through the entire width of the ship via one of the cross passageways. From one stanchion to another we performed our balancing act, wrestling the pot to the *Doria's* solid hull. Finally, in the beam of our lights, *Mother* came into view. Just a little further to go.

We slid the pot beneath *Mother* into her undercarriage. Bob went to open two N₂ valves that would allow Don and Chris to recharge their flasks from the inside of the habitat if it became necessary, and I pushed the pot up through the hatch to the two divers.

I popped my head up inside *Mother*. Chris began unloading the capsule. I was still feeling the effects of nitrogen and everything seemed pale and ghostly green from the incandescent lights and the sea green paint job inside the habitat. Someone had painted mermaids on the walls. In a high pitched Donald Duck voice I asked, "How you guys doing?"

"Hey, outa sight," said Don. "Here, use this hot water hose; it'll warm you up!" I stuck the hose down my hood and deliciously warm water flowed down over my chest and shoulders.

In a few moments Chris had loaded used utensils, a spent canister, and soiled clothing into the container, secured it and lowered it back through the hatch. I was thankful for the warm water respite, but now the water seemed doubly cold. The water temperature on the wreck was 43° F. Just as I was about to grab the pot, a hand reached down and grabbed the crossbar on my tank block. I popped back up inside and Chris said, "Here, get rid of these for us."

"What are they?"

With a grin from ear to ear, he replied, "Toilet bags."

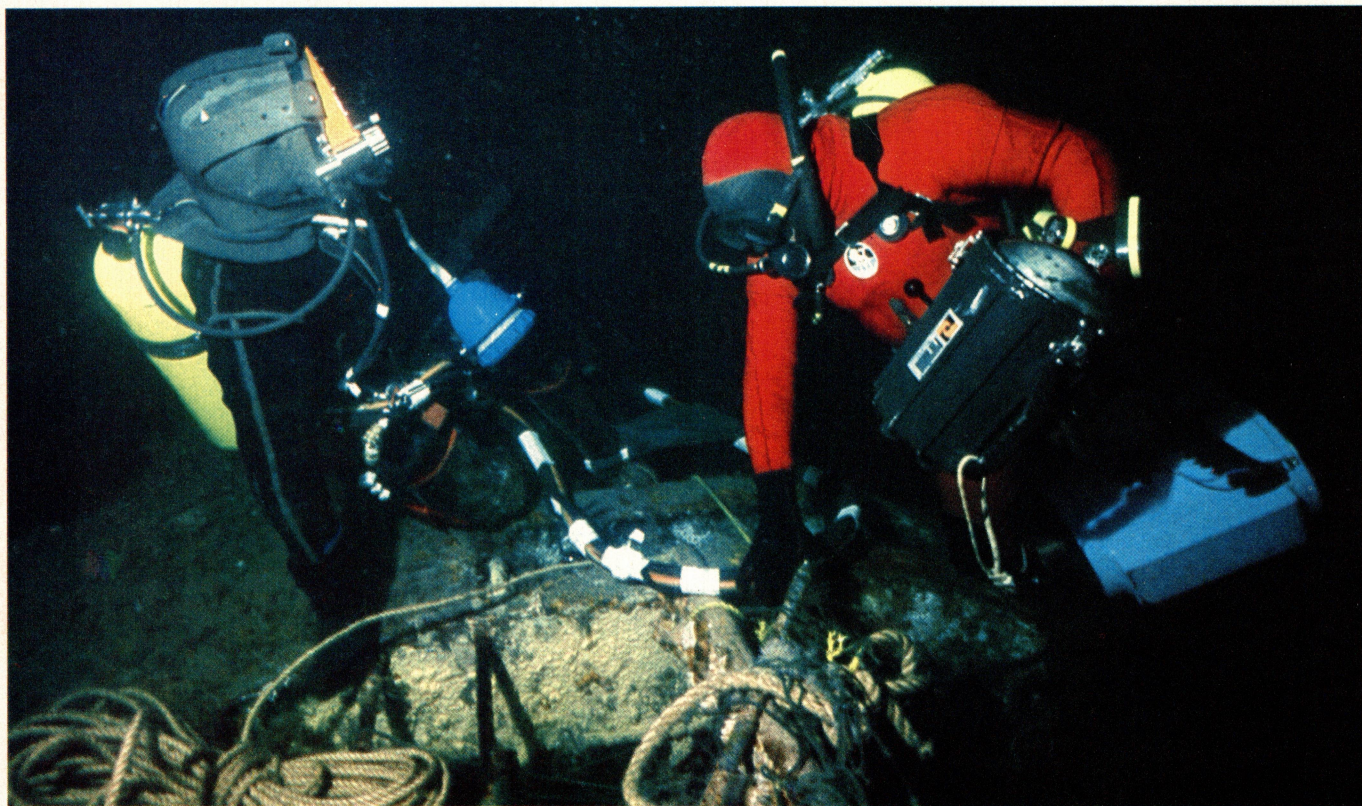
"Do I look like a garbage man?!" I said. It was ludicrous. Here I was, making this ridiculous night dive on one of the most difficult shipwrecks along the entire Atlantic seaboard, and DeLucchi hands me a couple of blue plastic see-through bags with defecation in them. And they were so buoyant, I had trouble getting them out of the entry-way.

After letting the bags float up and away from *Mother*, I grabbed the transfer capsule and was surprised to find that it still weighed as much as it did on the way down. (We found out later there was a ring of lead around the inside perimeter of the capsule put there as ballast.) I wrestled it to the edge of the cage where Bob was waiting. As he grabbed it, I know we both had thoughts of leaving it behind and retrieving it the next day. It would have been the sensible thing to do, because it would be twice as difficult to haul up the line as it had been to bring it down. But again, we both thought if we could get it up it would be one less working dive and one more photo dive we could make the next day.

About the time we hit the promenade deck and started to grapple the pot across the stanchions again, I began to breathe hard. I looked at my pressure gauge. "That's strange," I thought, "I still have 500 pounds left. On any normal dive, even at this depth, if I'd start to draw hard on my regulator I wouldn't really sweat it because I know I'd have enough air to make it safely to the surface. The slightly expanding air inside my tanks would be enough to see me through. But lugging a 65

ANDREA DORIA

Don Rodocker and Chris DeLucchi are two very talented young men who pulled a coup in the commercial diving world by saturating in their habitat Mother, on the side of the Andrea Doria, 160 feet down in the cold North Atlantic. Chris and John Clark prepare to enter the promenade deck to survey the wrecked luxury liner prior to cutting operations.



photography by Author

pound transfer capsule is something else." We hit the line and started to haul ourselves up with our free hand while kicking furiously with our flippers.

By the time we hit about 140 feet, I was sucking hard and really beginning to sweat it. We kept pulling ourselves up. I knew we'd be in trouble if we lost the transfer capsule because there wasn't another one on board, and it served to transport the vital CO₂ absorbent for scrubbing the habitat atmosphere. I couldn't inflate my Fenzy anymore because the tank valve was on the right side and my right hand had a grip on the pot. I was using my left hand to pull myself up the cable.

I could feel a slight panic welling up inside me and had to tell myself, "Cool it McKenney, you'll make it." How deep was I? — 120 feet, 100, 80, and then I was sucking so hard I said, "To hell with it, my life's more important than some damn metal pot!" I was out of breathable air. I let go of the pot and tore up the line. Bob was better at conserving air than I was and I felt certain that he'd have enough to make it. I just hoped he

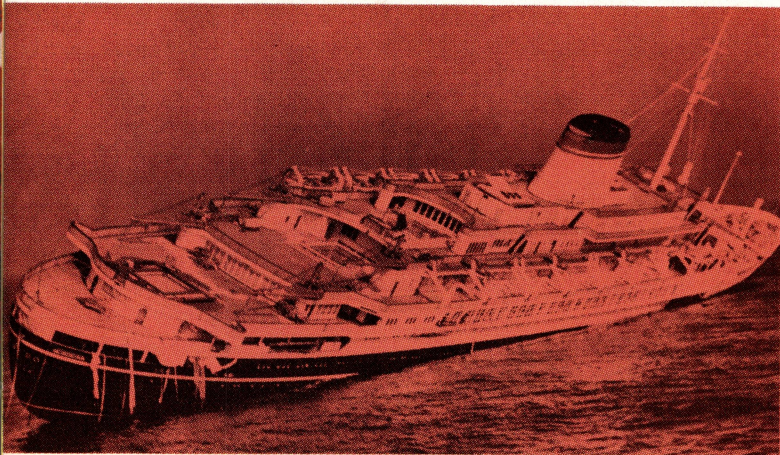
had the strength to handle that heavy weight by himself. It was pitch black, my Fenzy was now tight around my head gushing bubbles out of the exhaust, and I was desperate for air.

Shortly after I let the pot go, Bob lost the line when he moved his hand up to get a higher grip. When he did, he started to rapidly sink in the inky blackness. With a sickening feeling welling up in his gut, he frantically searched for the cable that he couldn't see in the dark. Furiously he kicked and it was just by luck that his groping hand found it.

Up above him I swam, pulling hand over hand, far exceeding the normal rate of ascent, but exhaling whenever I could. Don't let me pass out — not now! 60 feet, 50 feet, where was I? And then I saw it — a glow backlighting the regulators that came from the oxygen system in the dory. The regulators were tied at 30 feet — our decompression stop. Bob Coffey, a local expert diver from Fairhaven who had signed on the expedition, was our O₂ diver and thankfully was in the water at

the 30 foot stop with a light. I was really desperate for air and shot the last 20 feet in a matter of seconds. I fumbled to empty my Fenzy and at the same time tried to insert the O₂ regulator in my mouth. The anchor line was being jerked up and down in the swells by "Big George." I swallowed water and gagged. Finally I managed to jam the regulator into my mouth and suck in some of that life giving oxygen. I wrapped one leg around the cable gulping down the O₂.

A couple of minutes later Hollis bumped into me, so Coffey and I grabbed the pot from him. Exhausted, Bob shot to the surface and banged his head on "Big George," his Fenzy gushing forth a flurry of bubbles. In the meantime, Coffey struggled the heavy pot to the boat and handed it to one of the boatmen. There seemed to be a lot of commotion at the surface. The line was con-



stantly being jerked up and down and I was wishing that Hollis would hurry up and get back down here for his decompression stop. I looked at my watch. We were going on 25 minutes — it was imperative that he get back down! I remained at 30 feet waiting to see what would happen. And then my teeth were almost yanked out by a violent tug on the O₂ line. I guessed that they wanted me to come up, so I surfaced. I had been decompressing for three or four minutes.

When I hit the surface, amidst much confusion with lights shining, people shouting, and the small boat bobbing up and down in the swell, Bob shouted, "Jack, come on, they're getting the chamber ready. Get in the boat." Six hands then grabbed me and bodily hauled me into the boat where I was spread-eagled on my back. The heavy tanks prevented me from moving. As we started around the stern of the *Narragansett*, I could see people running about on board. Hands were flying over my body, unbuckling straps, taking my mask and fins off, and stripping me of all loose fitting gear.

After a somewhat ungraceful transfer from the dory to the *Narragansett*, falling and banging my knee and trying to strip down at the same time, we made it into the chamber. From the time Bob hit the surface until they ran us down in the pot 11 minutes had elapsed. Our dive had lasted 28 minutes. We lay exhausted. Don Gay, in charge of surface diving operations, was in the chamber with us taking the ride.

The air whistled in and we quickly dropped on table five to 60 feet. Bob and I tiredly gazed at each other with a look that can only be acquired after having shared

an incredible, exhausting and dangerous adventure. We were told later that while we had been thrashing about on the surface, six big blue sharks had been circling our decompression line.

"Here I am, 35 years old," said Bob, "losing my investment in this operation, losing part of my business because I've been away so long, almost losing my life, and what for — to bring up a pot of dirty clothes and garbage. I should have my head examined." Another hiss of air came steaming into the chamber purging out the stale gas. I smiled and thought back on all of the events leading up to this moment.

I guess you could say it had begun 17 and a half years ago, when on July 25, at 11:09 p.m. the Swedish ship *Stockholm* ran broadside into the Italian liner *Andrea Doria*. The *Doria*, a ship that by all contemporary marine standards wasn't supposed to sink, listed heavily to starboard and slipped beneath the gray Atlantic 11 hours later. That collision took 50 lives and millions of dollars in art treasures, personal property, and industrial goods to the bottom. She lies in 240 feet of water, 50 miles from Nantucket along the Massachusetts coast.

Numerous expeditions have attempted to get at the *Doria's* riches. Some have been successful in bringing up items of token value, but the majority of the treasure seekers have been bitterly disappointed when forced to abandon the project due to weather, formidable diving conditions, or a dozen other reasons that have kept her from relinquishing her valuables.

Original oil paintings, silks, woollens, cottons, and furniture have no doubt disintegrated beyond any value in the lengthy time they've been saturated with sea water. But there are vintage wines, metal sculptures, and a solid silver crest on the bulkhead of the main deck close to where a larger-than-life bronze statue of Admiral Doria stood. There is also an estimated \$1,116,000 in U.S. and Italian currency aboard. No one has ever been into the first class purser's safe since the sinking.

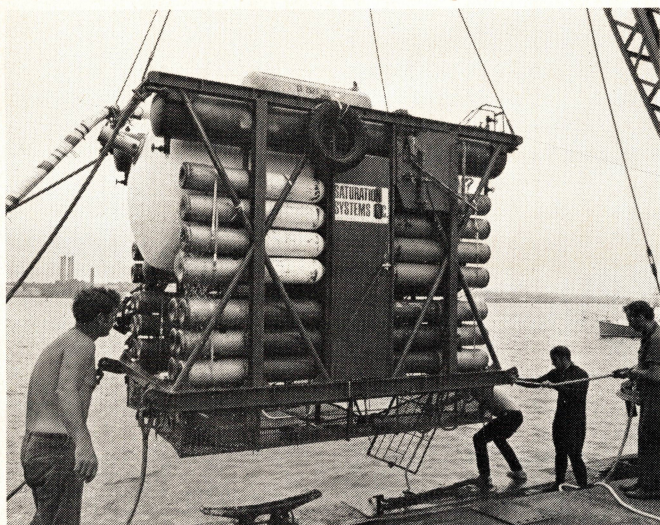
It's estimated that full place settings of *Andrea Doria* dishes might auction off in New York for upward of \$5,000 per eight place setting. There were jewelry stores and banks throughout the massive ship, and silver relief plaques in the chapel. The *Doria* is a big vault filled with goodies slowly sinking into the mud in a gray twilight world where strong currents sweep across her decks, fishermen get their nets caught in her superstructure, and big blue sharks cruise over her slick hull.

I had been on an expedition to the *Doria* once before, as a photo diver with Al Giddings, when Alan Krasberg had made an unsuccessful attempt to salvage the ship in 1968. Over that period of three weeks I had only made three dives to the wreck, so I was more than anxious to dive her again when Bob Hollis approached me with the idea. It was over dinner one night when Bob said, "How'd you like to go to the *Doria*, Jack?"

"My bags are already packed," I replied, "when do we leave?"

Bob explained that Don Rodocker and Chris DeLucchi, two young men from San Diego, Calif., had founded a firm called Saturation Systems Inc., and were planning as their first job, to attach a habitat to the *Andrea Doria*, saturate and salvage many of her valuables.

Don and Chris, although just 27 and 22 years old respectively, have pretty impressive backgrounds. Don, still currently in the Navy, looks a little like Paul Newman with a moustache, and is the great, great, great, grand-



photograph by Bernie Campoli

The habitat . . . Mother.

son of Alexander Graham Bell. Like his famous forefather, Don is an expert mechanic and graduated as a Machinist's Mate, "A" school shortly after joining the Navy in 1964. Machinist's school was followed by 24 weeks in nuclear power training. He completed air conditioning and refrigeration school and was assigned submarine duty in charge of hydraulics, pneumatics, salt and freshwater systems, and all associated machines.

Don completed U.S. Navy scuba training, second class and first class diver training, took saturation diver training, and was selected for the first 850 foot manned hydro dive and 180 foot saturation dive. He designed and built a regulator test panel, the aquanaut equipment shop on the Mark II deep dive system, built an open circuit gas heat exchanger used on two world record setting dives to 945 feet and 1010 feet, and was selected to make the first 850 foot saturation dive. Don also was employed for a couple of years, as an engineering consultant, by Oceaneering International Inc., one of the world's largest commercial deep diving companies.

Chris, who looks as though he should be a college student studying for a degree in accounting, began his diving career in 1962 as an assistant scuba instructor. In 1964, when he was 13 years old, he installed an underwater platform — sort of a mini-habitat — in Monterey Bay and conducted metals-corrosion studies. When he was 15, he designed and manufactured time-lapse underwater photography equipment in conjunction with Moss Landing Marine Lab. Chris went on to win awards in underwater photo contests, and chaired a symposium of 750 college and preparatory students at Chabot Jr. College in Hayward, California.

When he was 19, Chris manufactured a semi-closed mixed gas breathing apparatus. He joined the Navy in 1969, graduated Avionics "A" school with 21 weeks of extensive electronics training, and went to second class diver school where he acquired training in underwater welding, cutting, and salvage. In 1970, he was assigned duty with the bathyscaph *Trieste II*. In 1971, he graduated first class diver school and became a qualified diving supervisor. He was then assigned to the Mark II deep dive system, completed training with a 180 foot sat dive, and in 1972 established a new world open sea saturation depth record of 945 feet. During that dive he also took the deepest photographs ever taken by a free swimming man.

These two very young men, with years of experience

in the most sophisticated types of diving being done in the world today, founded Saturation Systems, Inc. on December 13, 1972, while they were still in the Navy. They rang doorbells soliciting money from business men and friends to build a habitat and support system capable of being transported anywhere around the country on a flat bed truck. It would be the only one of its kind, completely portable, with depth capabilities to 600 feet.

"There will be four of us along on the expedition to document it for a television special," Bob had said getting visibly excited over the prospect of exploring and filming this fabled shipwreck. "You, John Clark, and I will be handling movie cameras. Tim Kelly, who works at the Anchor Shack, will be coming along as sound man and can also help as a diving assistant — but we need one more photo diver."

"How about Bernie Campoli?," I offered. "Bernie's had Navy training, was a camera man on Sea Lab I and has worked with Ed Link on various projects." And so Bernie became part of the team.

A couple of months later the five of us flew out of San Francisco with 48 pieces of luggage, boxes, diving gear, Unisuits, cameras, and lighting equipment, and a 50 pound transfer capsule. United Airlines couldn't believe it when we descended on the airport, but they were more than gracious in their assistance and wished us luck on our venture.

Seventeen hours later, after changing planes in Chicago and then renting two station wagons in Hartford, Connecticut, (which will never be the same again) we made it into Fairhaven, Mass. at 2:00 in the morning. The next week proved to be a busy one building a shark cage (that we never got to use), checking out diving systems, wrapping umbilical cables, loading provisions on board the *Narragansett*, and slinging 245 K bottles of O₂, helium, HeO₂, air, and N₂ down into the hold.

The *Narragansett*, a fine ship owned and captained by Jack Jacobson, was to be our home for the next month. A stern fishing trawler, her hold was scrubbed clean, given a coat of paint, and slung with makeshift bunks that proved to be the most uncomfortable sleeping arrangement I have ever experienced. A major food manufacturer supplied us with enough TV dinners for just about every night at sea, and a fish company donated fish cakes to the expedition for just about every lunch while we were at sea. (You can bet that it was a pretty happy crew that set foot on shore and headed for the finest restaurant in Fairhaven at the completion of the expedition.)

Just about every square foot of usable deck space on the *Narragansett* was occupied. The MCC (main control center), a seven by eight foot square van, housed all of the electronic and valving equipment to monitor the saturation dive from topside. When Chris and Don were saturated there would be a man stationed in the van at all times to regulate and check on the gas flow, heating and power, and to remain in communications with the aquanauts down on the wreck. This was situated on the port side of the *Narragansett's* deck.

Next to the MCC was a five foot square shark cage. Opposite that was a push-pull compressor system designed and built by Rodocker and Gary Gayda to bring up the used gas from the divers, scrub it clean in a soda lime atmosphere, and then send it back down to be used over again. It was a very efficient gas exchange system that saved a lot of dollars in HeO₂. Behind the control van was a welder for cutting into the wreck, and a boiler to supply hot water to the divers.

Across from the boiler was a generator and a low

pressure compressor. And taking up a sizable amount of deck space, smack in the middle, was a decompression chamber dubbed the "blue tube." To get all of this equipment on board required the use of a seven ton crane that was brought out on the dock to sling everything onto the *Narragansett*. At one point the air brakes on the crane failed, and it started to roll. The crane operator bailed out, and 30,000 pounds of crane rolled off the dock and landed into the side of the MCC. It took a day to get the crane off the boat and the MCC repaired, and our ordeal with crane operators wasn't over.

There were 26 people on the expedition including Rodocker's wife Barbara, and Chris' wife Sue. Chris and Don would be saturating and working out of the habitat. George Powell, a Navy master diver, was in charge of the entire saturation diving system. Don Gay, a Naval Lieutenant, would be in charge of all surface support diving systems, and Don McMillan was the expedition doctor. Dave LeJune was a back-up sat diver, welder, and cutter. Louis Trujillo was in charge of mixing gases and came under Gary Gayda's supervision. Gary was also responsible for maintenance of the air compressors and the push-pull compressor. Jim Morris and Roy Walker were electricians. Jim Weaver, Tony Edison and Pat Albin were support divers and crew members.

George Powell, who is 34 and the youngest master diver in the U.S. Navy, is a blond, curly haired big boned strapping six-footer. He continuously chomps a cigar, and is as loud and boisterous as a bar room brawling seaman. Although not too articulate verbally, George can, nevertheless, keep an audience spellbound with his stories, quick wit, and superb command of that American exercise known as gesticulation. He's a humorous man and was largely responsible for keeping the morale of the troops up when there were bleak moments at sea.

During the week that we were preparing dockside, people would come down to the dock to see what was going on. One time a rotund, little old lady walked up to Bernie and George during an infrequent work break and said to George, "Do you think you can get my sister's rosary beads when you're down there on the ship? She was on the *Andrea Doria* when it sank, you know, and it would be so nice if she could get them back. She was in cabin 358 and they're in the drawer by her bed." Just as George was about to answer, she continued. "After all, I know you'll be successful in your venture, because anyone who names his little house after his mother has got to be a good boy." With that, she waddled off.

Mother is shaped like a fat white sausage, twelve feet seven inches long and five feet in diameter. She was constructed to A.S.M.E. (American Society of Mechanical Engineers) and U.S. Coast Guard codes, and is capable of supporting three aquanauts at a maximum depth of 600 feet up to 21 days. An entry hatch at the bottom of the habitat provides exit to the sea and can be either closed or left open while on the bottom. The breathing atmosphere is a mixture of 92 percent helium and 8 percent oxygen varying with saturation depth. The PO_2 (partial pressure of oxygen) is controllable between .25 atm and 2.0 atm, and a maximum PCO_2 of .04 atm throughout a temperature range of 35 to 100°F. The humidity level can range between 40-100 percent R/H.

On this expedition, heat was supplied to the habitat in the form of 105 degree salt water from a 350,000 BTU boiler on the *Narragansett*. The divers used hot water suits from Diving Unlimited. Although the system was surface-supplied with electrical power, heat, breathing and cutting gases, *Mother* was capable of being self-

contained for a minimum of five days, should anything happen to sever connections with the *Narragansett*. She stored 8000 cubic feet of high pressure helium and 1200 cubic feet of high pressure O_2 — plus an additional 4000 cubic feet of HeO_2 . Her displacement is 21,080 pounds and she has visual and audio communication at all times with the support vessel via closed circuit tv.


Inside the habitat are life support systems, two fold down bunks, a toilet, and a food warmer. She was designed to be lowered by flooding ballast tanks, and then run down on a wire cable anchored to the wreck — in this case the *Doria*. The other end was to be buoyed at the surface. A hand brake can arrest her descent or ascent. Two large air ballast tanks running the entire length of the habitat provide 2500 pounds minimum flotation for towing, and she was designed to be towable in a sea state six.

We left Fairhaven on Sunday, July 22, 1973, and were over the *Doria* the following day. It took us about six hours to locate the wreck and throw a grappling hook in. When she snagged, Tom Ingersoll, an ex-U.S. Navy salvage diving officer, and I made the first descent to identify and secure into the ship. Our mode of surface diving during the entire operation was to surface to 30 feet at the end of our dive and decompress on oxygen for the same length of time as our bottom time, regardless of what depth we descended to down to 200 feet.

If we were diving deeper than 200 feet we would also decompress at 20 feet for an additional 10 minutes. And as our fatigue factor increased over the days we lengthened our 30 foot stop by an additional five or ten minutes. The tables were worked out by George Powell and Don McMillan, and are what we used for the entire 146 dives made on the *Doria*. A K bottle of oxygen was secured into the 12 foot runabout, and George or Don usually ran the dive keeping track of the diver's time in the water.

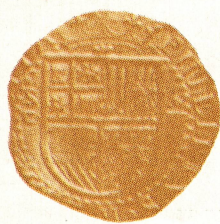
Tom and I made the descent. At about 140 feet we expected to see the wreck come into view, but at 160 feet all we saw was a free swinging grappling hook. We had lost our contact with the *Doria* and had to start all over again. Late that same day Tim Kelly and Don Gay managed to secure into the wreck. We were all relieved, but upon surfacing Don found he had a pain in his elbow so was run down in the chamber. He emerged later feeling fine. (Don had been awake for a straight 30 hours prior to making that dive. He had also had a slight CO_2 buildup from the hard breathing regulator he had used during that dive so it was suspected he was suffering more from fatigue than the bends.)

The next four days were some of the most physically demanding and exasperating days of the entire expedition. At one point, after we had secured into what we thought was the bridge wing, Chris discovered that it was the stern wing so we had to move the anchor line some 400 feet along the hull to the general vicinity of the metal doors that Chris and Don were going to cut through. These doors led into the foyer area where the first class purser's safe, jewelry shops, banks, and chapel are located.

We lost two days moving from the stern wing to the bridge wing. Then cables became fouled and the large one and a half inch diameter Sampson nylon line that we used for mooring the *Narragansett* chafed on the wreck and parted — another day lost. Meanwhile, Tom Ingersoll, Clark, Hollis, and myself made a dive on July 26, a historic date. It was the 17th anniversary of the *Andrea Doria* sinking. 

NEXT MONTH: CONCLUSION—TREASURE DOORS OPENED

TREASURE DIVING FOR FUN AND



By Judge Charles E. Nearn

Our group of intrepid diving adventurers from Memphis, Tennessee, has gained some notoriety among our friends for an unblemished record of absolute failure. In all of the years we've been diving, in all of the treasure expeditions we've embarked on, we have never found anything of any intrinsic value to anyone anywhere. It isn't that we haven't looked — we've been to the Bahamas, British Honduras, the Cayman Islands and the Florida Keys to pick up Spanish gold off the ocean floor — but we don't have a single doubloon to show for our efforts.

A few years back, we decided to try the diving at Cozumel. We had all read Bob Marx's book *Always Another Adventure* in which he describes how he found the *Matancero*, and we decided to try our luck on that ship — or whatever else we could find. So, early one cold fall morning Frank Stegbauer, Henry Hancock, Doug McNesse and I boarded a private plane for sunny Mexico. After refueling and eating breakfast at New Orleans we made the long flight over the Gulf to Merida. From there it was just a short hop to Cozumel.

The story of the *Matancero* is an interesting one. Spanish ships of the day (eighteenth century and before) went by two names, the official registered name and the nickname given by the sailors. The official name of the *Matancero* was *Nuestra Senora de los Milagros*. *Matancero* was the sailor's name for her. The meaning of *Matancero* is somewhat clouded. Probably it got the name from the place where she was built, Matanzas, Cuba. However, the name has been translated to mean "butcher."

Matancero was a merchantman of the nao class with a displacement of about 270 tons, a length of 75 feet and a beam of 14 feet. She hit the reef now known as Ma-

tancero Point in the early part of 1741. Her bottom split open permitting the green seas to enter and the varied cargo to exit. The captain and several of the crew were lost as well.

As far as treasure hunters are concerned, the ship was going the wrong way. She was coming from Spain instead of going to Spain. Hence, instead of a rich cargo of bullion and specie for the coffers of the Catholic Majesties of Spain, the ship carried needles, shoe buckles, spoons and pig iron for the colonists, and religious medals plus assorted gee gaws abundantly encrusted with green glass "emeralds" and clear glass "diamonds" for the natives.

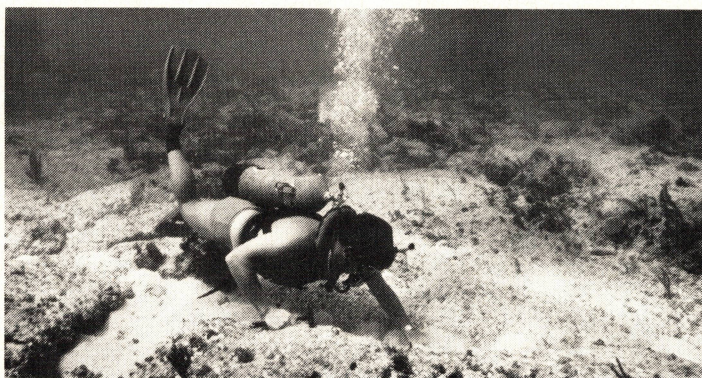
What now remains of the *Matancero* is scattered along the reef at a depth of about one to five fathoms. After better than 200 years immersion in salt water, the cargo remnants are encased in coral almost a foot thick. If it were not for the remaining cannon (originally there were sixteen), and the large anchor lying almost ashore, a diver would have no idea that a wreck existed.

To find any sizable piece of the cargo requires breaking the coral with a hammer or crowbar, while at the same time fighting the ebb and flow of the wave surge. Sometimes one is rewarded for his efforts with a part of a crucifix or medallion, but most of the time the coral only covers more coral. We found that previous divers had used dynamite to try to explore the wreck — large holes and chunks of blasted coral are found in the area — but we found no need to destroy live coral.

The *Matancero* was the first authenticated ancient Spanish wreck upon which we had dived. We knew that it had been previously worked by experts, but as we neared the wreck the adrenaline started to pump. We convinced

RE

photograph by Paul Tzimoulis



photograph by Author



Although the Matancero carried nothing of value, divers can't get over the notion that it is real treasure they are finding in the coral.

FAILURE

ourselves that although no known cargo of gold or silver was carried on the *Matancero*; there must have been at least one treasure chest which had gone undiscovered and awaited our clutching grasp. The captain must have hidden a hoard of doubloons aboard for illegal, private trade with the colonists.

By the time we arrived at the wreck site we all had contracted the most serious of divers' maladies — treasure fever. This fever causes the loss of the most rudimentary knowledge of diving, but ten minutes before we anchored, everyone was suited out for the first plunge. Gold was our only thought — to heck with the buddy system. It was every man for himself for a grab at the waiting wealth. The splash of the anchor and the splash of all divers hitting the water was heard simultaneously.

Almost immediately following the sound of the splash came the sound of the curses, coughs and gasps as all of us resurfaced. The fever had taken its toll. One of us dived for the bottom without bothering to turn on his air. Another headed for the bottom with a snorkel firmly between his teeth instead of a regulator. I jumped in with my crowbar in one hand, a bag for my treasure in the other, but immediately suspicioned something was wrong when my eyes burned and everything was a blur.

I finally concluded that I couldn't find treasure if I couldn't see it, and that it would have helped immensely when entering the water if I had kept one hand free for holding my face mask. We all climbed back aboard and were prostrate on the deck laughing at one another. We had learned our lesson. Before re-entering we established our dive plan, checked each others' equipment and with an assigned buddy, hit the water again.

We entered in about 20 feet of water and finned our way closer to shore to the wreck. The first view was a real shocker. Between the coral outcroppings was a hoard of green emeralds interspersed with diamonds. Many thousands of the cut glass stones have worked free of the costume jewelry and lie loose on the coral. As they are moved about by the current and are hit by the sun's rays, they glisten and sparkle. Although the cargo has no real value, you cannot get over the notion that it is real treasure that you are finding.

We got cut and burned by the coral and smashed our fingers, but had the time of our lives. Nothing else seemed to matter. I was in the bottom of a dynamited hole digging away for treasure and bleeding pretty freely from a coral cut at my ankle when I noticed a large barracuda, about five feet long, slowly circling my treasure hole and giving me a walleyed stare. He got so close I could hear his teeth click when he slammed his jaws together. But darn if he was going to get me out of my diggin's.

Several years have passed now since our *Matancero* adventure, but whenever we are together we relive our "treasure" find and have come to realize that there is no complete cure for the fever. Like malaria, a touch of it always remains with you. However, we have concluded that we are the real lucky ones for it seems that a valuable find leads not only to a division of the spoils, but also to divisiveness among the finders and a general falling out among friends. Instead of finding gold or silver in our searches, we have found a lasting comradeship and a truly good time wherever we go. And no amount of Spanish gold could ever buy that.

Blackbar Soldierfish

(*Myripristis jacobus*)

The squirrelfishes and soldierfishes are the subaqueous night owls of Caribbean reefs. By day they hang in sleepy suspension under a protective rock or coral overhang, drifting back and forth with the current. At night they come alive and spread out over the reefs in search of food. Dr. John Randall's study of the feeding habits of soldierfishes and squirrelfishes reinforced this fact: he found that individuals collected at night and during early morning hours had some sort of food in their stomachs, whereas specimens collected during the day were invariably empty.

□ The red color and big eyes of the Blackbar soldierfish are features found in all members of the Holocentridae family of squirrelfishes and soldierfishes. It has been speculated that the big eyes of these fish have evolved from their living in the dark. Another characteristic of holocentrids is an abundance of sharp spines. Interestingly, one of the ways that an ichthyologist identifies the different species of Holocentridae is by looking at the spine structure of the fish. Holocentrids are divided into two subfamilies: Holocentrinae (squirrelfishes) and Myripristinae (soldierfishes), and the chief difference between the two is that the squirrelfish has a long, sharp preopercular spine (on the cheek of the fish), while the soldierfish does not. □ The Blackbar soldierfish is the species of Holocentridae that is probably most often seen by divers, although it is not the most common of the soldierfish. The best identifying mark of the fish is the black and red bar just behind the head, near the gill opening. The color of this bar, as well as the overall red color of the fish, often varies in intensity, influenced by such fac-

tors as environment or time of day. It is known that a Blackbar soldierfish in an aquarium exhibits a bar that is much more red than black. □ The juvenile Blackbar soldierfish is usually more silvery than the adult. All young holocentrids during the postlarval planktonic phase drift about over a wide area, looking entirely different than their elders. During this time they are elongate, silvery fishes with pointed snouts. (At one time these postlarval fish forms were even thought to be a different species entirely,

called Rhynchichthys. Today this period of development is called the "rhynchichthys stage.") Because the Blackbar soldierfish is subjected to wide dispersal during this drifting, postlarval period, it extends over a relatively large range. The fish is found on both sides of the Atlantic, in the

western Atlantic from northern Florida to Brazil. In the Bahamas it is found from the Little Bahama, Great Bahama Banks and from Hogsty Reef. It is also found throughout the Gulf of Mexico. □ Even though soldierfishes spend their daylight hours trying to stay hidden, divers can see them by simply peeking beneath underwater ledges in shallow water areas. Occasionally the Blackbar soldierfish can be spotted as it makes a quick move from one shelter to another, but normally these fishes will not venture from their hideaways unless feeding at night. While most holocentrids eat crustaceans (crab and shrimp), the Blackbar soldierfish feeds predominantly on larval forms, mainly shrimp, stomatopod and crab larvae. The Blackbar soldierfish would be a good food fish were it not for its small size (eight inches maximum) and the fact that its spines make it difficult to handle.

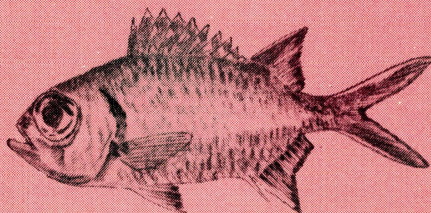


Photo By Jack McKenney - Text By Hillary Hauser Anderson

Photo taken in 50 feet of water off St. Croix, U.S. Virgin Islands. McKenney used a Rolleimarin, #2 close-up lens, Honeywell strobe in an Ikelite housing, Ektachrome X, 1/125 sec., f11.



CALIFORNIA UNDERWATER EXPOSITION

March 8, Anaheim Convention Center



By Hillary Hauser Anderson

Lights! Action! Entertainment!

Undersea battle between schools of crabs; giant devil-fish; mating octopuses; attacking sea lions; molten lava spilling into the sea; Arctic ice diving; and the penetration of the *Andrea Doria* tomb.

Where is all this happening?

At the first California Underwater Exposition — the world's largest undersea event — which will combine an evening festival of fast-action subsea films with a huge afternoon display of futuristic equipment for diving. All of it will take place at the huge Anaheim Convention Center, where the doors will open on March 8 to an estimated 7000 sea enthusiasts.

At 3 p.m. the giant exhibit area will open for public viewing. Divers will be able to see everything from space age underwater devices to the latest in photo equipment and snorkels. Many different manufacturers and corporations in the sea business will be there to explain their products, to show what's new. You'll have a chance to meet and talk to underwater cinematographers, ichthyologists, aquanauts, writers, inventors and other divers.

At 8:30 p.m. the evening festival will begin, and the program is guaranteed to stir every imagination and arouse a wide variety of interests. Ernie Brooks II, President of the Brooks Institute of Photography, Santa Barbara, will present his multi-media screen presentation which features dazzling photo techniques against a background of impact music. Jack McKenney, editor of *SKIN DIVER*, will take the audience to the deep grave of the *Andrea Doria* and tell of the salvage attempt made on the ghostly ship last summer. Joe MacInnis, Canada's man of the sea, will present his film on the Sub-Igloo project, under the Arctic

ice, documented last year by National Geographic.

Cinematographer Lee Tepley will be on hand with his film *Fire in the Sea*, which will take viewers underwater off Hawaii to see volcanoes erupting into the sea. Al Giddings will present his film *Sea of Cortez*, which documents mating octopuses and sea lions that rush at divers. California film producer Dave Adams will show his mind-bending kaleidoscopic film *Deep Blue World*. From Europe comes the film *Undercurrents*, by photographer Robert Lehman, that will plunge viewers into schools of ghostly squid and a battle between schools of crabs.

The first California Underwater Film Exposition is an offshoot of a newly formed non-profit, charitable and educational foundation as granted in a charter under the State of California. The objective of the organization is to encourage public education and appreciation of the oceans and the sea life therein. Foundation board members, ten in all, include a university professor, judge, attorney, magazine publisher, film maker, astronaut-aquanaut, wet suit manufacturer, dive store proprietor and two marine biologists. All profits from the California Underwater Exposition will be used to initiate, sponsor, promote and carry out plans and activities that will further the preservation of marine life. One of the proposed projects of the foundation is to award cash film grants to young, aspiring underwater cinematographers who meet certain requirements.

The California Underwater Exposition is expected to be a knock-out, sell-out that no sea enthusiast will want to miss. Tickets are \$6 and \$4, which will cover both the evening performance and exhibition/get-together in the afternoon. For ticket sales or information, write: CUE, Box 10931, Santa Ana, Calif. 92711. (714) 675-4350.

SDM TRAVEL SECTION

House Reef, Stella Maris, Long Island, Bahamas



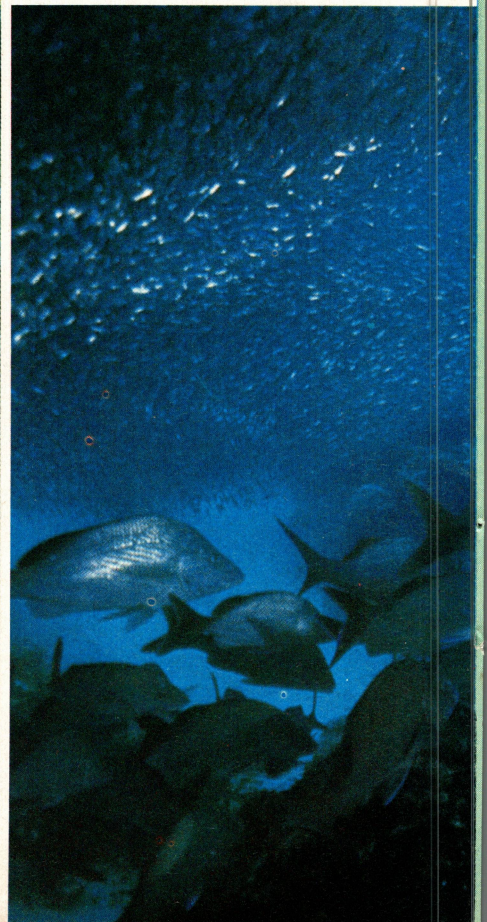


The Current Club

*diver's
hideaway
in the
Bahamas*

By Paul J. Tzimoulis

Split Reef



Cleverly tucked away in a secluded corner of North Eleuthera Island is a cozy little beach hotel which has recently boomed as one of the newest and hottest dive resorts in the Bahamas. The Current Club is a vacationing diver's dream come true — a small hotel with informal atmosphere, fantastic meals, complete scuba facilities, friendly hotel management, and great diving just 5 to 20 minutes from the hotel dock. Diving activities range all the way from shallow water snorkeling over beautiful coral gardens, to some of the most extraordinary, scuba diving an expert could want.

A cluster of duplex cottages and neatly trimmed buildings sit at the edge of an expansive shallow water sound which remains sheltered from the winds and ocean swells. Yet just around the corner lies a deep water channel which leads directly to the deep blue Atlantic. The buildings are almost hidden in the dense foliage of a tropical garden setting. Flowering hibiscus, wild orchids, and burgeoning coconut palms line the walkpaths. Tall casaurina pines provide shade and coolness for the outside dining patio, and a fine white sand beach directly in front of the hotel is most inviting for a cool midday dip.

The hotel grounds rarely appear crowded, or even busy, for there are only 19 rooms at the Current Club, room for barely 50 guests. The service is personalized,



photography by Author

Boiling Hole Twin Anchor Wreck





Diver Gardner Young in "Little Grand Canyon" at Split Reef.

the dress very casual, and the pace is a slow, easy tempo. Nassau is only 40 miles but the horn-beeping bustle of downtown Bay Street seems light-years away. Gone are the discordant sounds of jangling telephones, blaring television, and rumbling trailer trucks. All that is heard in the glow of the late afternoon sun is the gentle lapping of tiny waves, muted laughter from a distant conversation, and the tinkle of ice cubes in a half empty tonic glass. Peace and tranquility are the treasures to be found at the Current Club.

Few divers had ever heard of the Current Club until last year, for it had operated as a quiet rest resort and fishing camp for years. Early in '73, the club was purchased by a group of California businessmen avidly devoted to the sport of diving. The investment group's two best known members are Al Santmyer, owner and operator of the Laguna Seaports chain of dive shops, and Lyle Shelton, owner and operator of a wet suit manufacturing firm called Del Mar Supplies, Inc. To these entrepreneurs, this sleepy little hotel seemed like the ideal setting for a new diver's resort.

It wasn't long before scuba equipment was being shipped into the freshly renovated hotel. A 20 cfm Worthington/electric air compressor was quickly installed for filling the 40 shiny new rental tanks stacked up in the scuba shed. New regulators, weight belts, tank packs, fins, masks, and snorkels were also added to the hotel

inventory. A speedy 24 foot Fiberform outboard craft was converted into the club's first dive boat, and this was soon followed by the arrival of a 22 foot Century Trident inboard with a drop-ramp bow. Still a third vessel, a 36 foot Magnum, stands ready as a backup dive boat when things get really busy.

Best of all is the fact that the Current Club is ideally located close to some of the most unusual and fascinating diving to be found anywhere in the Bahamas or Caribbean. Regardless of wind direction there is always a lee side of some island or cay that can be dived, and much of the diving is just minutes from the dock. Here are just a few dive spots which you might sample during a week's stay at the club . . .

Split Reef — Three miles outside (ocean side) of Current Cut lies Current Rock, a small stony outcropping supporting a steel tower and navigation light. Surrounding the rock is a cluster of high coral heads separated by patches of rippling white sand. Split Reef is one of these coral heads, but it is peculiar in shape and stands apart from the main group of heads. It sits in 50 feet of water and appears somewhat oblong in shape. It measures 120 feet long, 50 feet wide, and rises up 25 to 30 feet from the sea floor. The unusual feature of this coral head is a five foot wide crack which splits the reef in half, thus creating its name. The crack runs clear across the width of the reef and appears to be a clean break for the edges are sheer vertical wall.

The split in the reef is called "Little Grand Canyon" for the walls are spectacularly colored with red encrusting sponge, canary yellow sponges, bright green algae, and a myriad of other colorful marine life. The powdery white sand on the canyon floor reflects the sun's penetrating rays so that all of the detail and marine life is well illuminated. The crevice is alive with great numbers of fish — groupers, rockfish, margate, and schools of grunt. A large blue parrot fish makes his home in a small coral cave in the wall of the canyon. In all, the canyon is an ideal spot for underwater photography . . . particularly if fish portraits happen to be your special interest. Visibility around Split Reef is exceptionally clear because the reef lies very close to the deep water drop-off. Clear blue oceanic water sweeps across the reef on an incoming tide, carried in from the Northeast Providence Channel (10,000 feet deep), the main ocean causeway which connects the Tongue of the Ocean with the open Atlantic. Water clarity ranges from 100 to 200 feet.

A long coral tunnel also runs through the reef, parallel to the canyon. It's called the "Tunnel of Love" because the formation is a cozy six feet in diameter and very romantic in appearance. Among its regular occupants are two large French angelfish who execute graceful pirouettes at the tunnel entrance. The inner walls are coated with scarlet and lavender sponge, and the diver's light can easily pick out such jewel-like creatures as the banded coral shrimp, aero crab, Bahama nudibranch, and royal gramma. The water inside the tunnel is very still, no current or surge, and the fish hang motionless like stars in outer space. Traversing the tunnel is a beautiful swim and quite safe for even the novice scuba enthusiast.

The top of Split Reef is equally beautiful for it is covered with an array of corals, sea fans, gorgonia, sea plumes, and sponges. A large purple sea fan of remarkable hues is the center attraction, buttressed by whip-like gorgonian stalks which bend gently with the current. Over 50 species of Bahama fish can be seen on this little reef,

and it's soon obvious that spearfishing has never been practiced here. The fish are totally unafraid of an approaching diver, and are often willing to feed right out of your hand. Several large amberjack can usually be seen circling Split Reef and a half dozen small barracuda make this spot their regular haunt. Small sharks have also been seen in this vicinity, but their appearance is infrequent. They come in from the deep water channel for a curious look and then continue on their way. No diver has ever been menaced by these little two or three foot long specimens. It takes 12 to 20 minutes to reach Split Reef from the hotel dock, depending on conditions.

Flower Garden — located in the same cluster of coral heads, but more to the west side of Current Rock, is a very large, high coral head. It lies in 60 feet of water and rises straight up to within 15 feet of the surface. Because the top of the reef is so shallow, the corals there seem brighter, thicker, and more beautiful than anywhere else in the area. An extraordinary amount of sea plumes, coral fans, sea whips, and gorgonian corals give this particular reef the appearance of a lovely flower garden . . . and also the reef's name.

Flower Garden is like a Hollywood undersea set, strategically placed at just the right depth for the best lighting, most brilliant colors, and ideal background setting. An underwater photographer could easily spend an entire day there, happily clicking away with close-up lenses and macro-photo gear. Feathery plumes of delicate tube worms bloom like wild flowers, with their purple or orange plumes of dazzling hues. Hard corals of every imaginable description and size are tightly packed together, forming a living crust over this hundred foot long coral mound. Delicately structured sponges of fuchsia, strawberry, pink hues mix with the hairy tentacled orange crinoids to form a Picasso fantasy in this splendid setting.

Both the top and sides of this reef are alive with browsing fish of all kinds. Rockfish, dog snapper, hogfish, and Nassau grouper all make their home there. Queen, French, and grey angelfish glide by, eyeballing the camera lens as if it were some magical instrument which might produce instant food for these hungry creatures. Nestled in the deep crevices of the reef itself are the small animals — blennies, hawkfish, gobies, squirrelfish, and small morays. Flower Garden is a fine example of a good Bahama coral reef . . . ideal for both snorkeler and scuba diver.

Boiling Hole — Located on the inside (shallow water sound) of Current Cut, four miles due south of the hotel dock, is one of the most unusual undersea phenomena in the Bahamas. The sea floor in this area is mostly a monotonous flat sandy bottom with patches of eel grass scattered here and there. The depth of water is a constant 20 to 25 feet. Located in the middle of one of these grass patches is a small bowl-shaped hole, 40 feet long, 20 feet wide, and 15 feet deep. Ordinarily, a passing diver would not even take the time to check it out. But there's an exception in this case, because this particular hole is jammed packed with fish . . . like a freshly opened can of sardines.

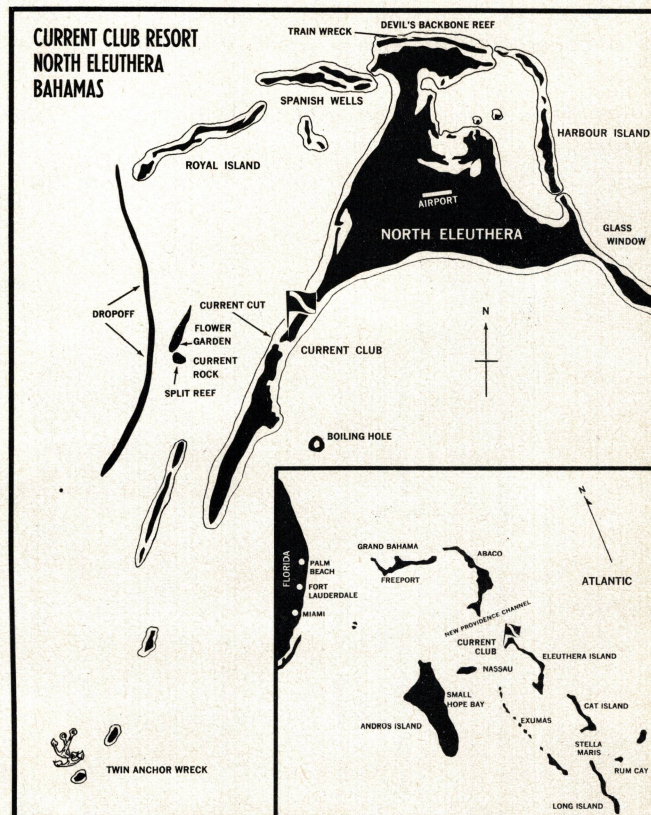
Never in my life have I ever seen so many fish of so many species congregated in such a small area. There are so many fish at times that it is impossible to see the bottom of the hole! A school of large grey snapper occupies the lower portion of the fish bowl. Above them is a veritable cloud of tiny baitfish, probably silversides. At one end of the hole is a small crevice from which water flows in and out. It seems to lead deep underground. Living just inside the crevice entrance is a school

of red snapper and a very friendly black grouper. And mixed in with this strange community are six or seven nurse sharks, ranging in size from a two-foot long baby to a 12 foot granddaddy. To make matters more incredible, a giant 100 pound amberjack has taken up residence there and cruises around the edge of the hole, above the cloud of bait fish. He is sometimes joined by an entire school of his associates, sometimes numbering 30 or 40 big amberjacks. A large school of horse-eye jack also cruise over the hole regularly. Lounging in the sand beside the hole are often several big sting rays.

The dive guide instructs visiting divers to approach the edge of the hole slowly and carefully, so as not to disturb the fish. By peering over the edge, one can observe this entire phenomena from close range. Then, if a diver inches himself over the edge and down into the hole, he can actually mingle with the fish and sharks less than a couple of feet away. It's a fantastic experience . . . a little like plunging into a giant aquarium!

Local North Eleutheran fisherman have named this small blue hole the "Boiling Hole" because they have occasionally observed great amounts of foul smelling sulfur water boiling out of the hole during strong tide periods. This phenomena is thought to occur at full moon phases of the calendar when tidal flows are at peak flow . . . thus flushing out the sulfur water which is trapped in the deeper regions of this underground reservoir. The entrance to this blue hole is such a narrow, small crevice that it does not permit exploration by a scuba team, so no one really knows how big or how deep the underground cavern really is. And the reason for this incredible concentration of fish is a complete mystery, for the phenomena does not exist at other known blue holes.

The Current Club is ideally located close to some of the most unusual and fascinating diving in the Caribbean.



Current Cut — Two hundred yards from the hotel dock lies still another strange and exciting diving phenomena. Current Cut is a very narrow deep water pass between the tip of North Eleuthera and a long spit of land known as Current Island. Barely 75 yards across, this natural channel serves as the only link between two large bodies of water — the Northeast Providence Channel, and North Eleuthera Sound. The rise and drop in tides causes millions of gallons of seawater to pass through this gap at tremendous speeds of seven to ten knots. It is from this strong current that both the hotel and the pass have gotten their names. Current Cut is reputed to be the fastest flowing water in all of the Bahamas.

It is no wonder then, that a drift through the cut with scuba gear should be one of the most bizarre dives in the Bahamas. It's a thrill almost beyond description, only to be compared with downhill snowskiing, surfing the Banzai pipeline, or taking a roller coaster ride! It's a hairy dive, blending fast moving water with sudden and sometimes startling confrontations with big fish. Shooting the cut is recommended for expert divers only, for it demands all of the skill and cool headed discipline a diver can muster.

Diving in Current Cut is limited to just a few hours a day, during an incoming tide. This is when the visibility is best and a drifting diver can be carried into the safety of the shallow waters of the sound. The dive boat slowly motors out through the cut, bucking the incoming current and searching for just the right spot for starting the dive. Once everyone is completely geared up and ready to jump, the dive boat engine is cut and the divers tumble into the fast flowing water. Once you jump, you are committed, for there is no possible way of getting back to the dive boat. It's like parachute jumping.

The next step is to descend to the bottom as quickly as possible, so you can orient yourself properly and enjoy the drift. Current Cut is 65 feet deep in the middle and both sides are sheer walls scoured out of the limestone by centuries of swift flowing water. Visibility in the cut

can range from 60 to 100 feet, and you can see the bottom rush by at freight train speeds.

You remain suspended five to ten feet off the bottom, observing rocks, corals, fish, and lobsters sweep by you at dizzying speeds. If you listen closely, you can even hear the rattling of small stones and bits of coral hitting the sides and bottom of the cut as they are swept through this natural funnel. The sensation is a little like being blown through a wind tunnel. With a little practice, you can control your arms and legs enough so that you can actually "fly" through the cut. The dive boat also drifts along with the current, maneuvering to stay fairly close to the rising bubbles.

In addition to the strange sensation of flying through the cut, you may have the thrill of meeting some pretty fair size fish. A school of four large eagle rays live in the cut and often accompany the drifting divers. The largest ray is perhaps 12 feet from wing tip to wing tip. Schools of big amberjack, horse-eye jack, and blue runners also cruise the cut, darting back and forth in front of the onrushing divers. Probably the most startling encounter is likely to be the giant barracuda who also makes his home in the cut. He is estimated to be six or seven feet long and very old. One private pilot reported seeing the old 'cuda from the air while flying low over the cut.

There are a number of submerged caves, crevices, and deep niches along the sides of the cut, and it is quite common to find these crevices jammed full with lobster. The problem is that you have no opportunity to stop, for if you grab hold of a rock or coral, your mask and fins are immediately swept away. The current is just too powerful to fight. Two ballast stone piles from ancient wrecks have also been spotted in the cut, one of them complete with cannons and cannon balls. Neither wreck has been identified or worked, for it is virtually impossible to conduct any wreck examination in this swift water.

The fast water portion of Current Cut is approximately a quarter of a mile long and a drifting diver can make the

A friendly nurse shark is being filmed by diver Marty Cohen at the Boiling Hole, an area that is jammed packed with fish.



trip in less than five minutes. Many divers are so thrilled by the experience they will make two or three drift dives before the tide changes. It's a fantastic experience and totally different from the normal scuba routine.

Current Cut, Boiling Hole, and Split Reef are just a few examples of the exciting dives which await you at the Current Club. Much of the waters surrounding this new resort still remain unexplored and uncharted by divers. For example, a deep water drop-off and coral wall is believed to lie just a few hundred yards west of Split Reef. The profile of this drop-off has been recorded on a fathometer and Bahama navigation charts indicate the depths drop sharply from 60 feet to an astounding 2500 feet. Yet no diver has explored this wall.

Sixteen miles southwest of Current Cut lies the Samphire Cays and old Yankee Channel, a passage once used by old-time sailing ships which navigated through those treacherous coral reefs. There lies the remains of a mystery shipwreck, clearly marked by two large anchors solidly cemented into a shallow water reef. The identity of the wreck is unknown but its age is believed to be 100 to 150 years old. Rumors of other wrecks, sunken cannons, and cannon balls in the same string of cays continues to persist, but the area is still to be fully explored.

Twelve miles northwest of Current Cut is a beautiful formation of coral heads known as Egg Island Reef. This is also virgin diving territory, with depths ranging from 10 to 60 feet and enormous coral heads rising up from the sea floor to within a few feet of the surface. Nearby is a large Lebanese freighter which ran aground on a coral reef in early 1971. Most of the ship sits high and dry on the reef, but the lower portion of the hull rests in 20 feet of water and provides excellent diving.

Beyond Egg Island lies Devil's Backbone Reef, 18 miles from the Current Club. This was once believed to have been the most treacherous reef in the Bahamas, causing the wreckage of dozens of sailing ships, freighters, and other ships. It is there you will find one of the most extraordinary undersea sights . . . the remnants of a Civil War train cradled in a sandy bowl among coral heads. The train was part of a narrow gauge railway system being shipped from the United States to a sugar plantation in Cuba more than 100 years ago. Two of the four-wheel bogies and a number of the solid steel locomotive driving wheels remain intact.

Barely a hundred yards from the train wreck is the remains of a 180 foot long steamer known as the *Cien Fuegos*. The big steel passenger ship was wrecked in 1895 and now rests in 30 feet of water. The remains of another half dozen ships can be seen on Devil's Backbone, including the *Angleterre*, the *Caernarvon*, the *Vanaheim*, and a large shrimp. The diving and exploration possibilities around North Eleuthera are endless, and it's simply a matter of how long you care to stay.

After a day's diving, there is plenty of time to relax and enjoy the cordial atmosphere of the Current Club. Conch fritters with spicy hot sauce are served in the late afternoon, along with gin tonics, rum colas, or other island coolers. The bar is the hotel's main gathering place and serves as both a clubhouse and cocktail lounge. The interior is decorated with fish nets, glass floats, and local Bahamian paintings. A large saltwater aquarium quietly bubbles away, and offers hours of fascinating amusement to dedicated fishwatchers. Checkers, chess, and darts are available to those who care to participate in a friendly match. A local Eleutheran band comes in two or three nights a week to play Calypso and Bahamian folk songs

for guests, and the lounge seldom closes before midnight.

The Current Club is perhaps best known for its superb Bahamian and American cuisine. Broiled red snapper served with peas and rice is one of the favorite dishes among divers, but American entrees such as stuffed pork chops, baked ham, roast leg of lamb, and barbecued ribs are equally popular. The food is all delicious and the portions more than ample. Current Club also has a fine wine list with both European and American selections.

The quaint little village of Current is within walking distance of the hotel and certainly worth a tour. It is regarded as an important Bahamian historical site, for it is the spot where the very first English settlement was established some 327 years ago. In 1647, a Puritan leader by the name of William Sayle led a small group of Puritan independents from the Bermuda colony to the Bahamas in search of more liberal religious freedom. They called themselves the "Company of Eleutherian Adventurers," taking their name from the ancient Greek word for freedom, *eleutheria*. This is how Eleuthera Island got its name. Today, the village of Current is a sleeping little town in the hot Bahamian sun, with cement paved streets and colorfully painted houses. There are a couple of small stores in town which carry groceries and a few Bahamian handicrafts, but for the most part it remains untouched by modern day tourism or commercial development.

Although the Current Club seems insulated from the outside world, it is easily accessible. The North Eleuthera Airport is just nine miles from the hotel, and there are daily flights coming in from two airlines. Bahamas Air offers four flights daily from Nassau to North Eleuthera, departing from Nassau at 8 a.m., 11:30 a.m., 1:40 p.m., and 5:35 p.m. The cost of a round trip ticket from Nassau is just \$28. Mackey International offers one flight a day from Miami nonstop to North Eleuthera on Mondays, Wednesdays, Fridays, Saturdays and Sundays. It departs from Miami at 2 p.m. and arrives at 3:15 p.m. There is also a Mackey flight from Fort Lauderdale nonstop to North Eleuthera on the same days. It departs at 9:30 a.m. and arrives at 10:35 a.m. Return flights are on the same days. The cost of a round trip ticket from either Miami or Ft. Lauderdale to North Eleuthera is \$52.

The cost of staying at the Current Club is comparable to most diving resorts in the Bahamas and Caribbean. The summer season rate is \$42 per day (double occupancy), which includes a gourmet breakfast, fantastic dinner, and a full day of diving. The winter season price is \$51 per day. Bay Travel Inc. is offering a special all-inclusive "one week divers' package" which includes six full days of diving, six nights at the hotel, breakfast and dinner daily, transportation from the airport to the hotel and return, all baggage handling, and a Bahamian welcome cocktail. The price is \$250 during the summer season and \$300 during the winter season. Add 10 percent to this amount for service charges (tips) and Bahamian tax. There is also a special "three-day divers' package" which includes all of the services listed in the one-week special. The cost of this short sampler version is \$123 for the summer season and \$150 for the winter season. For more information, prices, and brochures, contact: Bay Travel, Inc., 2435 East Coast Highway, Corona del Mar, California 92625, or telephone (714) 675-4320.

If you are searching for a quiet, relaxing resort with virgin diving opportunities, give the Current Club a try. It may be off the beaten tourist trail, but it's "right on" when it comes to diving. 🐠



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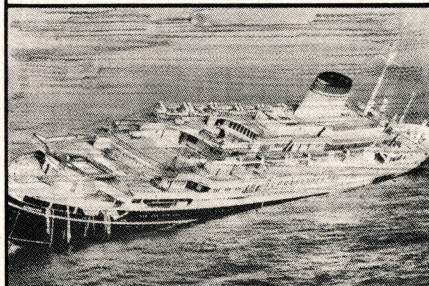
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Ron McOmber swims through underwater archway off Lanai Island, Hawaii.

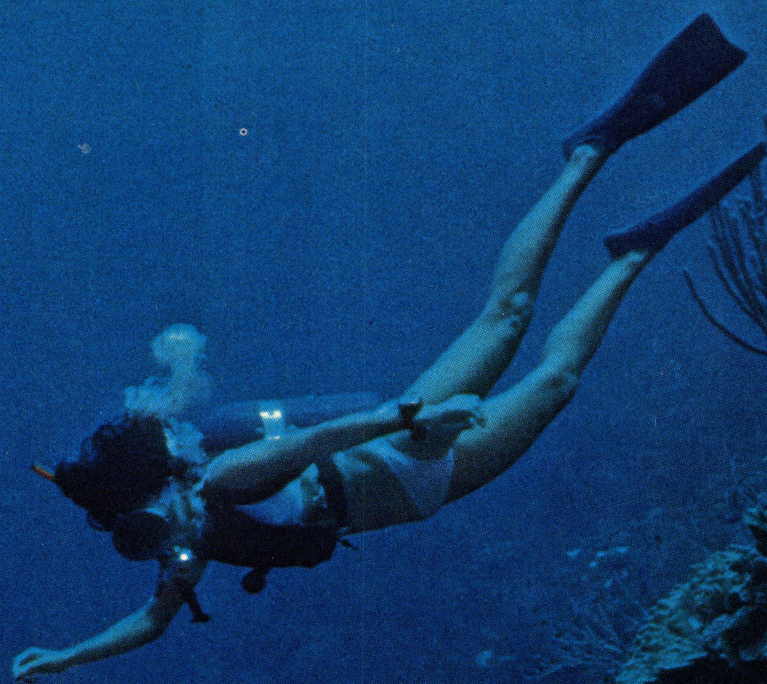
Diving is done along 50 miles of virgin shoreline on the lee side of the island. Underwater visibility ranges from 100 to 200 feet. Underwater attractions include lava canyons, sheer wall drop-offs, caves, archways, tunnels, and beautiful Pacific coral reefs in both deep and shallow waters. Eagle rays, big fish, morays, rare sea-shells, and beautiful Hawaiian tropical fish are seen on practically every dive.

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For more information and reservations, contact: Ron McOmber, Club Director, 1017 E-1 Alewa Drive, Honolulu, Hawaii 96817. (808) 595-2917

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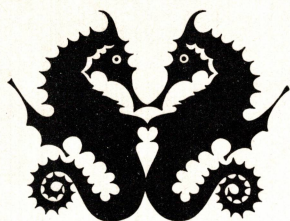
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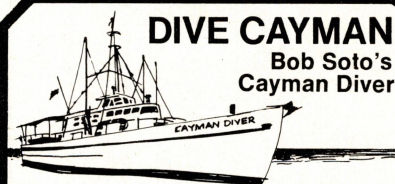
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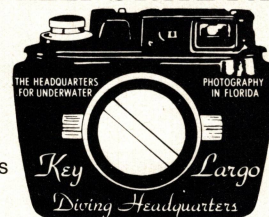
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GO BELIZE

Go Mexico Inc., a Minneapolis based travel agency, is now offering a one-week dive tour package to Belize (formerly British Honduras), Central America. The tour includes six full days of diving, tanks, packs, weight belts, airport tax, airport transportation, and all tips. Hotel accommodations, scuba facilities, and boats are being furnished by Keller Caribbean Sports Lodge, located on the Belize River less than a half-mile from the airport.

The dive tour consists of a boat cruise down the Belize River and out to the Belize Barrier Reef and off-shore atolls of Turneffe and Light-house Reefs. Major dive spots include English Caye Banks, Turneffe Reef, the Great Blue Hole, Long Caye Reef, and Half Moon Cave drop-off.

Cost of the dive tour is \$585.00 per person for the six-day/six-night package. Round trip air fare from Miami to Belize, aboard TAN Airlines, is \$99.00 per person. Three tours are scheduled for January. Departure dates are Jan. 9, Jan. 16, and Jan. 23. For additional information, write to: Frank Beddor, Jr., Go Mexico Inc., 975 Northwestern Bank Bldg., Minneapolis, Minn. 55402, or telephone (612) 333-5431.

JAMAICA TOURS

News Tours, a Chicago wholesaler of scuba tours, just inaugurated the first familiarization trips for travel agents. The trip to Jamaica was hosted by Pan-American Airways and Chalet Caribe Hotel, Montego Bay. It was the first trip in the U.S. exclusively for scuba oriented travel agencies.

Eight travel agents escorted by their tour leader Harry Shanks of Chicago YMCA Metro Council spent five days in the MoBay area. They stayed at Chalet Caribe, a complete diving resort, run by the Montego Bay Reef Divers Ltd., where they were taught skin diving and the basics of scuba. They found the pleasures of the sport and an insight into diving tourists.

Chalet Caribe has become one of the major resorts for diving activity in Jamaica. In the last year alone it has hosted over 500 divers. It has complete facilities for the diver and best of all, many of the best dives in MoBay area are off the beach in front of the hotel.

In addition to Chalet Caribe, the agents were hosted by Tryall Country Club and Golf Course, Montego Bay Racquet Club, Richmond Hill and the Sundowner Hotel at Negril Beach.

News Tours of Chicago is planning additional study trips for travel agents in the future. Some of the locations will be Micronesia, Sardinia, and the Red Sea.

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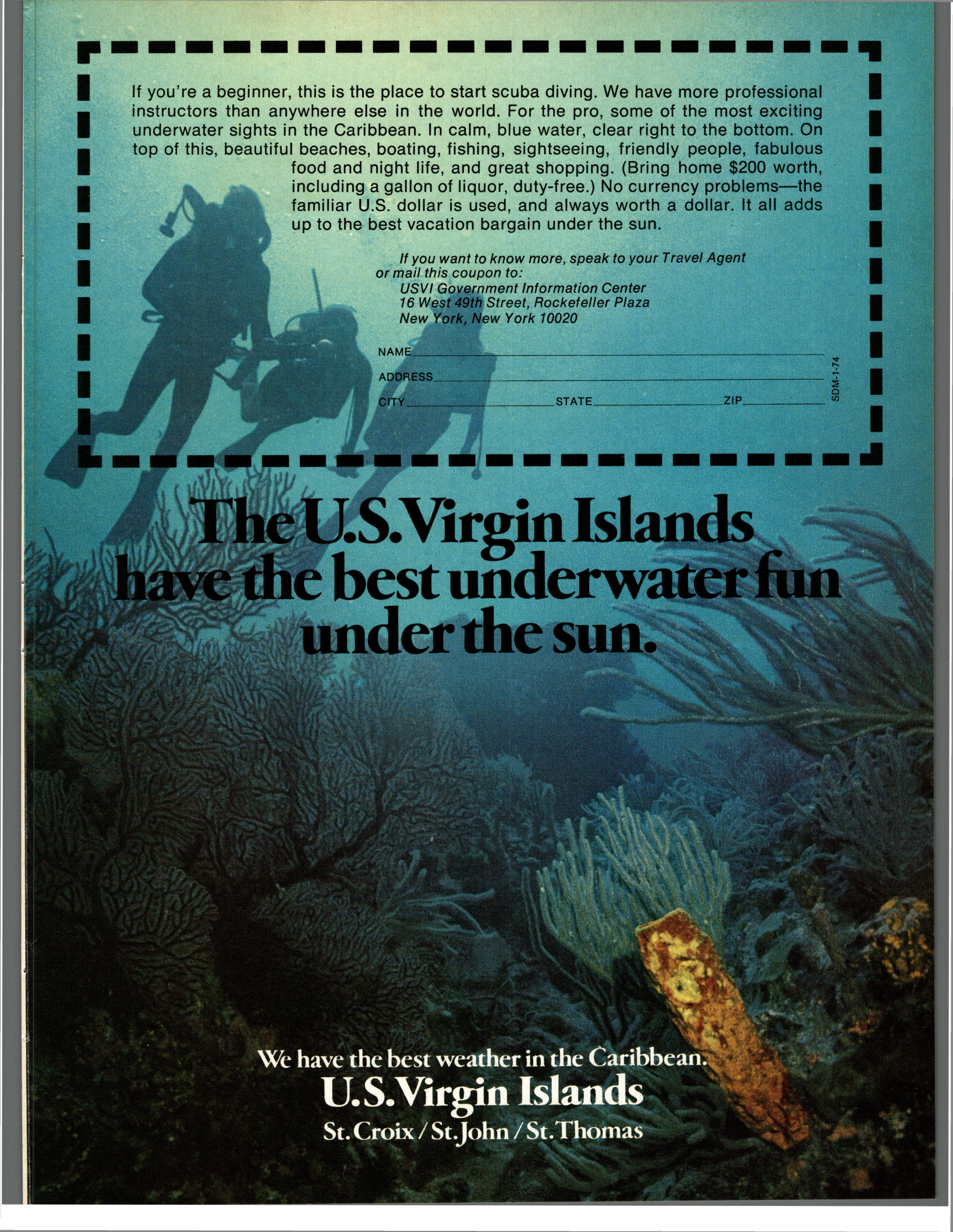
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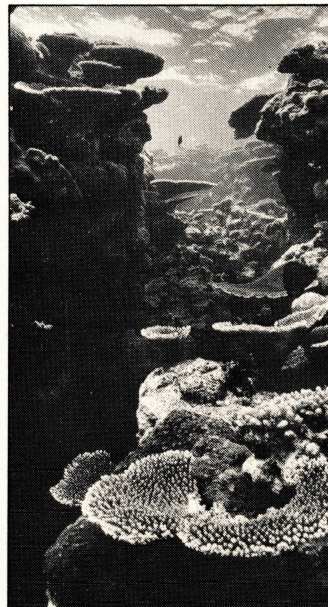
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The Coral Reef Marine Center offers all makes and models of scuba equipment and accessories, including such specialty items as Farallon DPV's, underwater camera housings, fish collecting equipment, and aquariums. The store also carries a complete line of water skis, Zodiac inflatable boats, swim wear, and wet suits.



The scuba department features a 20 cfm Worthington air compressor which can pump pressures up to 5000 psi. An air storage bank of 20 large air storage cylinders insures immediate refills, regardless of the number of tanks. Cost of refills is \$1.00 for a standard 72 cubic foot tank and \$1.25 for an 80 cubic foot tank. The center maintains an inventory of 100 rental tanks and regulators for use in scuba classes, daily dive trips, and island tours.

The store offers a full range of diving instruction, from basic scuba training to advance scuba and special interest courses. Both NAUI and PADI certification is issued, depending on the nature and content of the course. All training is conducted by certified instructors. A course in tropical fish collecting and salt water aquarium keeping is one of the most popular specialty courses.

The Coral Reef Marine Center offers daily trips to 17 different dive locations around the island of Guam. Prices for the trips range from \$10 to \$20, depending on whether it is a half-day or full day trip, and whether it is a boat or beach dive. All trips are conducted by top local divers and instructors who have excellent knowledge of the waters and reef areas. Trip prices do not include equipment but rental gear is available.

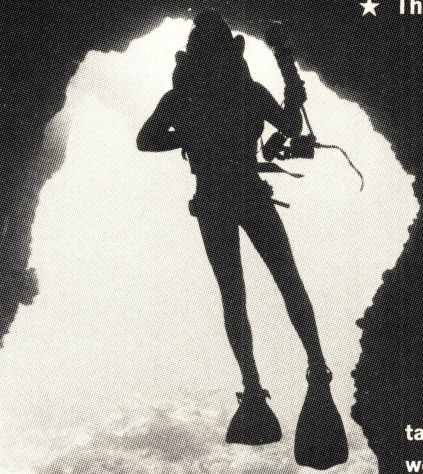
For more complete information and price lists, write to: Wayne Baumunk, General Manager, Coral Reef Marine Center, Inc., Box 2792, Agaña, Guam.



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DIVE SHOP IN TRUK

The first dive shop in Micronesia (Trust Territory) has opened its doors for business on the island of Moen, Truk Lagoon. Truk is the site of the sunken Japanese naval fleet lost during a fierce World War II battle, and has recently become a diver's mecca.

Located right at the water's edge on the road between the airport and the Fisheries Office, the Blue Lagoon Dive Shop offers complete scuba facilities. A brand new Ingersoll-Rand Model 3310 heavy duty air compressor has been installed for rapid refill of the 40 rental scuba tanks now in inventory. Also on hand are more than a dozen single hose regulators and an ample supply of masks, fins, snorkels, weight belts, safety vests, and other scuba accessories. The shop was designed and financed with the assistance of the Truk District Office of Marine Resources Developed, and is supported by Truk's progressive-minded District Administrator, Juan Sablan.

The shop is owned and operated by Truk's best known scuba diver and wreck expert, Kimiuo Aisek. The 46 year old professional diver has worked for the Truk Fisheries Office for the past four years, heading up the starfish control program. Aisek and his fellow star divers were instrumental in preventing the total destruction of



Truk's living coral reefs by the voracious crown of thorns starfish.

During his years of hunting starfish, Aisek came across many of the Japanese ships sunk during World War II, and has pinpointed the location of some 22 wrecks. Just last year, he discovered the location of the *Yamagiri Maru*, an ammunition carrier with a cargo of 18-inch projectiles — the largest shells used in World War II.

Aisek was also with Al Giddings and Paul Tzimoulis during the original search and subsequent discovery of the sunken Japanese submarine I-169. He served as skipper of the dive boat *Hukuluk* and starred in the film, *Silent Warrior*. Aisek is one of the original members of a group formed during that period and called the Wreck Jumpers.

The Blue Lagoon Dive Shop will be charging \$1.25 for air refills and \$3.50 per day for tank (with air) rentals. Rental regulators are \$4.00 per day. Rental prices on other equipment are available upon request. Aisek will also assist visiting divers in making boat rental arrangements, and will recommend knowledgeable wreck guides who are available for hire.

Divers planning to visit Truk should be aware that they must procure a Truk Dive Permit from the Fisheries Office before the start of their diving activities. Divers will have to show their scuba certification card during permit application. Visitors should also familiarize themselves with Truk's strict conservation laws. Removal of any artifact from the sunken wrecks is prohibited by law, and violation could cost a fine of \$1,000 and six months in jail. For more information, write: Kimiuo Aisek, Blue Lagoon Dive Shop, Box 429, Truk, Eastern Caroline Is. ➤



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The Salt Raker Inn, on Grand Turk Island in the Turks and Caicos Islands, British West Indies is the dream come true for American diver Doug Gordon. The author of a recently published SDM article said he had always wanted to own a Caribbean dive hotel where there was lots of fun, little humidity, beautiful waters alive with fish and coral, and wonderful guests. "Life down here is all I hoped it would be," he reports.



Gordon thinks the diving off Grand Turk is superb: "The 'wall' begins but a quarter mile or less directly off our beach," and "everything from giant manta rays to Royal grammars flit about by the score." There is plenty of lobster, conch and fish in the area, and diving and U/W guide service is available. For more information and a complete price list contact: Doug Gordon, The Salt Raker Inn, P.O. Box 1, Grand Turk, Turks and Caicos Islands, B. W. I.

TOBAGO DIVE TOURS

A Pennsylvania firm called the Teach/Tour Diving Company is now offering weekly diving vacation tours to Tobago, a small tropical island near Trinidad. Selling for \$389 the complete trip package includes round trip air fare from New York, hotel accommodations for eight days and seven nights, two meals per day, ground transportation, two tanks of air per day, and weight belt. Divers are required to bring their own regulator, safety vest, and personal dive gear.

Teach/Tour has set up its own scuba facilities in Tobago, including an 18 cfm Bauer air compressor, storage bank of six 240 cubic foot air cylinders, 40 rental scuba tanks, and a variety of regulators and scuba accessories. Two 17 foot Boston Whalers powered by 70 h.p. Johnson outboards are being utilized as dive boats. Underwater guide services and scuba instruction is being conducted by certified PADI instructors. Dive guests are flown to Tobago aboard BWIA International Airlines and stay at the cozy little Tobago Diving Resort. The tours are scheduled to depart every Sunday.

For more information and brochures, write to Teach/Tour Diving Company, P.O. Box 390, Nazareth, Pennsylvania 18064. (215) 759-6882.

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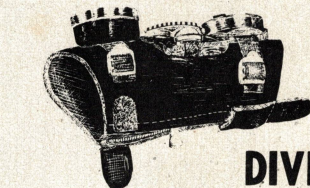
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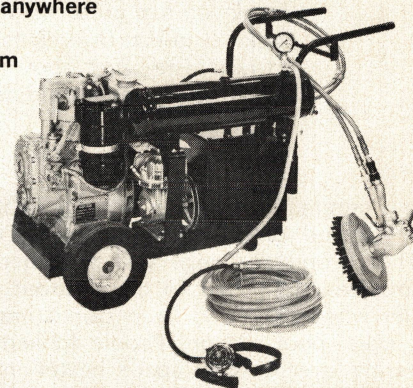
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Alaska is a land of hardy souls, as evidenced by Yvan Van Driesch's scuba class. The course is taught for ten intensive days in the pool at the University of Alaska near Fairbanks, and culminates with a required open water check-out dive at Harding Lake. Did you have any apprehensions on your first check-out dive? Well, the students of one class had a few anxieties that I'll bet never even crossed your mind on your big day — the mercury on the frozen lake read minus 49 degrees.

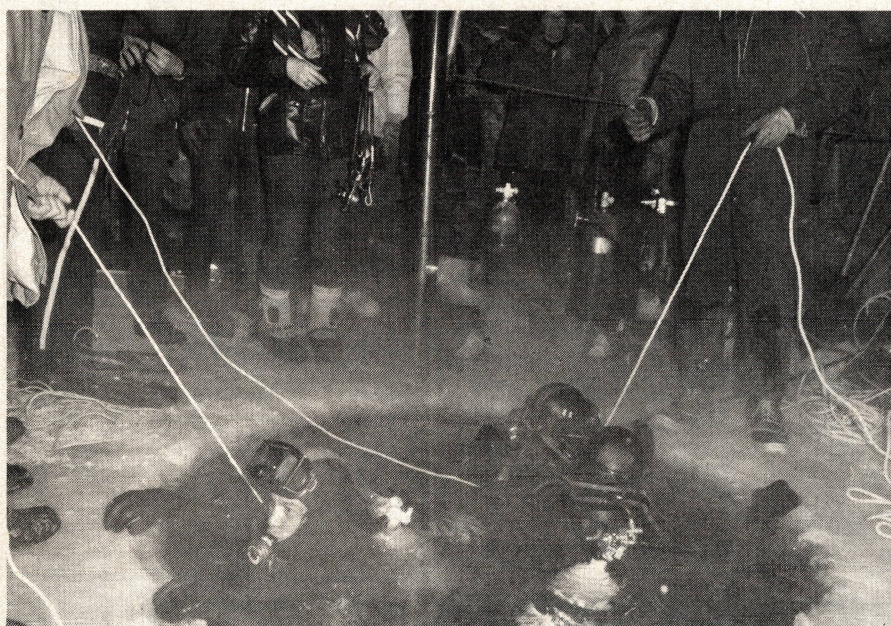
Meeting at the lake, dressed as Alaskans do for a winter day of minus 49 degrees, the students found the job of donning wet suits was a major event. The problem was not that the changing room was too small to remove all of their winter attire, but rather that it was a huge,

manufacturers have about warm dive booties. Some of the 30 divers chose to ride a snow machine, but most declined the wind-chilled ride and ran to the tent.

Once in the Army wall tent, the students found that the blazing Yukon stove had tempered the air to a comfortable nine degrees above zero. Steam was rising from the open hole in the ice and was lying low around everyone's knees. (Keep in mind this is not a Polar Bear Club meeting, but merely an ordinary scuba class check-out dive.) Rigged with tanks and flippers in the tent, the students checked their air supply and called for assistance to thaw the first and second stages of their regulators if Jack Frost had been quicker than they had been to enter the tempting, temperate, plus 37 degree water.

-49° CHECK-OUT - ALASKAN STYLE

By Reginald A. Emmert



photography by Author

Think you had problems with your first open-water check-out dive? In Alaska Yvan Van Driesch had to have his regulator thawed out with a space heater first (above right) and then convince his students that the "steam" coming from the water meant it was actually 86 degrees warmer in the water than it was outside!

one room, military recreation lodge heated only by a small fireplace and some portable heaters the divers had brought.

The second challenge was presented by the wet suits themselves. They had to be retrieved from an unheated trailer where they had been stored immediately after the last class' pool session. People looked a little ridiculous hovering over a small space heater in a parka, stocking cap, storm pants and mittens, thawing out and limbering their wet suits so they could enjoy the "sport" of scuba diving. Try removing your clothes and putting on a pre-heated wet suit in three seconds or less!

Did you ever see a scuba diver in a wet suit with snow machine boots on? Well, it was the best foot gear the divers could have worn for the 250 yard hike to the sport diving tent pitched on the ice, regardless of claims

Divers went down 30 to 70 feet, one at a time, with the instructor Yvan Van Driesch, while a relief diver stood by. To make a "double first," the first student diver was Trygre L. Jorgenson, an Eskimo and student at the University of Alaska. Trygre was Van Driesch's first male Eskimo to complete the course in Fairbanks or Anchorage. Van Driesch himself is an oceanographer from the Black Dolphin Diving School and commercial diving operation in Anchorage. Yvan has been diving for 27 years and has worked with Captain Cousteau. This was not a routine course, but it was his second winter class. (Last year it was warmer: only a minus 35 degrees!)

Alaskan fun and sports come in all forms, but recently it was rigidly swathed in black while blundering over frozen white in search of liquid blue. >>>

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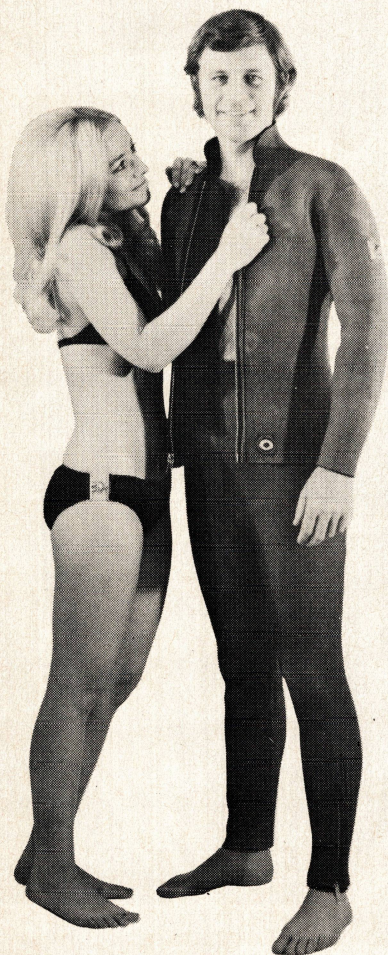
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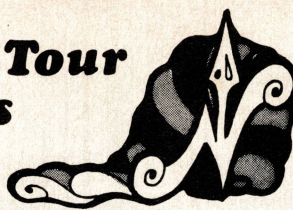
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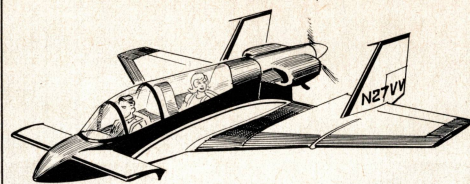
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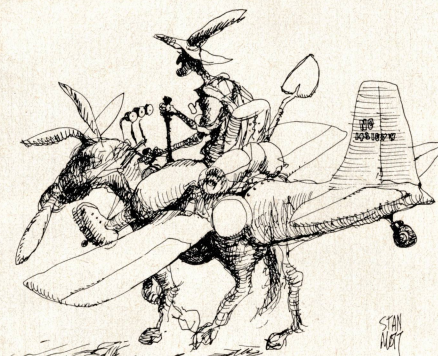
Dive Tour News



- Jan. 4, 11, 18, 25—BONAIRE—8 days, Royal Caribbean Services, New York, N.Y.
Jan. 12—CAYMAN ISLANDS — 12 days, The Anchor Shack, See & Sea, San Francisco, Ca.
Jan. 18—COZUMEL/YUCATAN — 7-12 days, Rick Tegeler, See & Sea, San Francisco, Calif.
Jan. 20 — COZUMEL — 7 days, Go Mexico, Inc., Minneapolis, Minn.
Feb. 1—PANAMA/GUATEMALA—12 days, Photomarine Int'l Travel, Reseda, Calif.
Feb. 1, 8, 15, 22—BONAIRE—8 days, Royal Caribbean Services, New York, N.Y.
Feb. 8—COZUMEL/AKUMAL—8 days, Sunland Int'l Tours, Beverly Hills, Calif.
Feb. 11—HAWAII/KONA—8 days, Photomarine Int'l Travel, Reseda, Calif.
Feb. 15 — COZUMEL/YUCATAN — 7-12 days, See & Sea, San Francisco, California
Feb. 16—CAYMAN ISLANDS — 8 days, See & Sea, Inc., San Francisco, California.
Feb. 17—BONAIRE/CURACAO — 10 days, Carl Roessler, See & Sea, San Francisco, Calif.
Feb. 17 — COZUMEL — 7 days, Go Mexico, Inc., Minneapolis, Minn.
Feb. 18—ROATAN/HONDURAS—8 days, Island Reef Safaris, Wilton, Conn.
Mar. 1, 8, 15, 22, 29—BONAIRE—8 days, Royal Caribbean Services, New York, N.Y.
Mar. 8—COZUMEL/AKUMAL—8 days, Sunland Int'l Tours, Beverly Hills, Calif.
Mar. 15—COZUMEL/YUCATAN — 7-12 days, See & Sea, Inc., San Francisco, California.
Mar. 15—AFRICA/INDIAN OCEAN — 21 days, Carl Roessler, See & Sea, San Francisco, Ca.
Mar. 16—CAYMAN ISLANDS — 8 days, See & Sea, Inc., San Francisco, California.
Mar. 24 — COZUMEL — 7 days, Go Mexico, Inc., Minneapolis, Minn.
Mar. 25—PANAMA/SAN BLAS—10 days, Photomarine Int'l Travel, Reseda, Calif.
Apr. 5—COZUMEL/AKUMAL—8 days, Sunland Int'l Tours, Beverly Hills, Calif.
Apr. 5, 12—BONAIRE—8 days, Royal Caribbean Services, New York, N.Y.
Apr. 9—CARTAGENA, COLOMBIA—11 days, Sunland Int'l Tours, Beverly Hills, Calif.
Apr. 10—ROATAN/HONDURAS—6 days, Island Reef Safaris, Wilton, Conn.
Apr. 15—HAWAII/KONA—8 days, Photomarine Int'l Travel, Reseda, Calif.
Apr. 19—TAHITI/RANGIROA—9 days, Photomarine Int'l Travel, Reseda, Calif.
Apr. 19 — COZUMEL/YUCATAN — 7-12 days, See & Sea, Inc., San Francisco, California.
Apr. 20 — TRUK/PALAU — 15 days, Atlantis Safaris, Miami Shores, Fla.
Apr. 21 — COZUMEL — 7 days, Go Mexico, Inc., Minneapolis, Minn.
Apr. 21—BONAIRE/CURACAO — 10 days, Dewey Bergman, See & Sea, San Francisco, Ca.
Apr. 27 — TRUK/PALAU — 15 days, Atlantis Safaris, Miami Shores, Fla.
May 12—GRAND CAYMAN—9 days, Photomarine Int'l Travel, Reseda, Calif.
May 17—COZUMEL/YUCATAN — 7-12 days, See & Sea, Inc., San Francisco, California.
May 18 — GREEK ISLANDS — 17 days, Emery Travel Service, Bradford, Pa.
May 19—BONAIRE/CURACAO — 10 days, Rick Tegeler, See & Sea, San Francisco, Calif.
May 19 — COZUMEL — 7 days, Go Mexico, Inc., Minneapolis, Minn.
May 24—COZUMEL/AKUMAL—8 days, Sunland Int'l Tours, Beverly Hills, Calif.
May 24 — COZUMEL/CHINCHORRO REEF — 11 days, Sunland Int'l Tours, Beverly Hills, Ca.
May 25—CAYMAN ISLANDS — 8 days, See & Sea, Inc., San Francisco, California.



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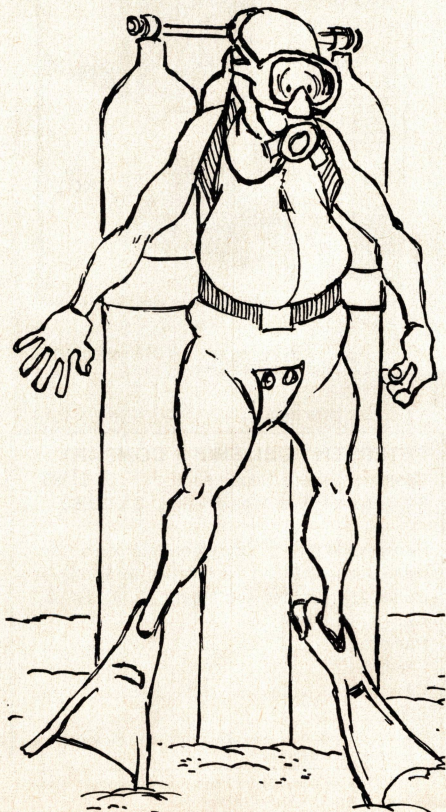
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 June 14—COZUMEL/YUCATAN — 7-12 days, See & Sea, San Francisco, California.
 June 15 — TRUK/PALAU — 15 days, Atlantis Safaris, Miami Shores, Fla.
 June 17 — AKUMAL — 10 days, Photomarine Int'l Travel, Reseda, Calif.
 June 22—CAYMAN ISLANDS — 8 days, Dewey Bergman, See & Sea, San Francisco, Ca.
 June 23 — COZUMEL — 7 days, Go Mexico, Inc., Minneapolis, Minn.
 June 24—PANAMA/SAN BLAS—10 days, Photomarine Int'l Travel, Reseda, Calif.
 June 26—GALAPAGOS ISLANDS — 18 days, Dewey Bergman, See & Sea, San Francisco, Ca.
 June 28 — COZUMEL/AKUMAL — 8 days, Sunland Int'l Tours, Beverly Hills, Calif.
 July 13—ANDROS, BAHAMAS—7 days, Underwater Safaris, Boston, Mass.
 July 20 — BRITISH HONDURAS — 8 days, Sunland Int'l Tours, Beverly Hills, Calif.
 July 21 — COZUMEL — 7 days, Go Mexico, Inc., Minneapolis, Minn.
 July 28—TAHITI/RANGIROA—9 days, Photomarine Int'l Travel, Reseda, Calif.
 Aug. 2, 30—COZUMEL/AKUMAL—8 days, Sunland Int'l Tours, Beverly Hills, Calif.
 Aug. 19—PANAMA/SAN BLAS—10 days, Photomarine Int'l Travel, Reseda, Calif.
 Aug. 30—COZUMEL/CHINCHORRO REEF—11 days, Sunland Int'l Tours, Beverly Hills, Calif.
 Sept. 2—MARISLA/SEA OF CORTEZ—7 days, Photomarine Int'l Travel, Reseda, Calif.
 Sept. 13—RIO DE JANEIRO, BRAZIL—14 days, Sunland Int'l Tours, Beverly Hills, Calif.
 Oct. 4—MARISLA/SEA OF CORTEZ—7 days, Photomarine Int'l Travel, Reseda, Calif.
 Oct. 11—COZUMEL/AKUMAL—8 days, Sunland Int'l Tours, Beverly Hills, Calif.
 Oct. 27—TAHITI/RANGIROA—9 days, Photomarine Int'l Travel, Reseda, Calif.
 Nov. 22—COZUMEL/AKUMAL—8 days, Sunland Int'l Tours, Beverly Hills, Calif.
 Nov. 27—HAWAII/KONA—8 days, Photomarine Int'l Travel, Reseda, Calif.



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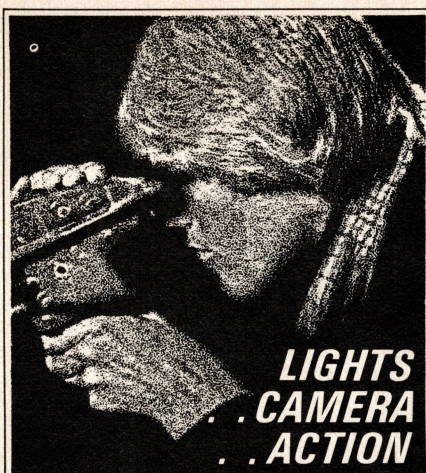


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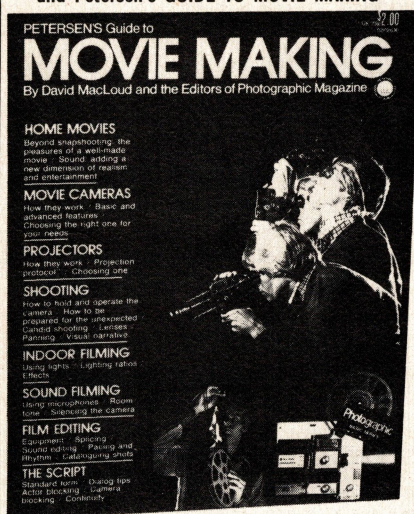
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(Continued from Page 16)

April 6-14

NAUI Extended Bio-Marine Exploration Seminar, San Diego, Calif. (Contact: NAUI Pacific Branch, 867 Basin St., San Diego, Calif. 90732)

April 7

NAUI Underwater Photo Seminar, Boston, Mass. (Contact: NAUI North Atlantic Branch, Box 291, Back Bay Annex, Boston, Mass. 02117)

April 7-13

NAUI Instructor Certification Course, Portland, Maine. (Contact: NAUI North Atlantic Branch, Box 291, Back Bay Annex, Boston, Mass. 02117)

April 8, 15, 22, 29

Underwater Photo Course, Chicago. (Contact: Berry, 4989 S. Archer Ave., Chicago, Ill. 60632)

April 10, 17, 24

Professional Regulator Repair Technician Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago 60632)

April 13-20

NAUI Instructor Certification Course, Portland, Maine. (Contact: NAUI North Atlantic Branch, Box 291, Back Bay Annex, Boston, Mass. 02117)

April 15

Commercial Diving Class. (Contact: Divers Institute of Technology, Dept. S, Box 70312, Seattle, Wash. 98107)

April 15

Professional Diving Instructor Course, Monterey, Calif. (Contact: Ed Brawley, 598 Foam St., Monterey, Calif. 93940)

April 15-19

NAUI Advanced Diving Course, Cay Sal Island. (Contact: LCDR B. J. McGee, USN, 4206 Plaza, Fairfax, Va. 22030)

April 18-June 7

NASDS College, San Diego. (Contact: NASDS Educational Division, 1214 Rosecrans, San Diego, Calif. 92106)

April 20

NAUI Underwater Film Review, New York. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, New Jersey 08023)

April 20

PADI Master Diver Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago, Ill. 60632)

April 20-21

YMCA, Scuba Instructor Institute, Springfield, Ohio. (Contact: Fred D. Crowner, 7459 Dixie Hwy. No. 3, Florence, Kentucky 41042)

April 20-22

NAUI Instructor Qualification Program, Montreal, Que., Canada. (Contact: NAUI Canada, 10 Monet Ave., Etobicoke, Ont., Canada)

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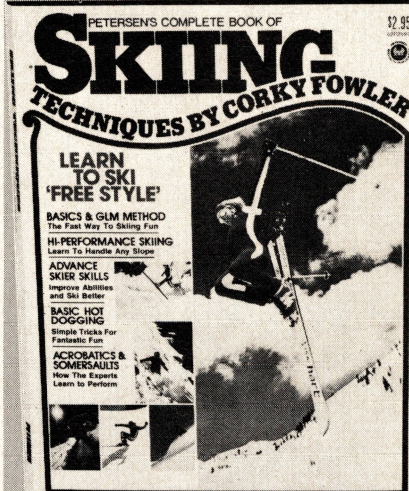
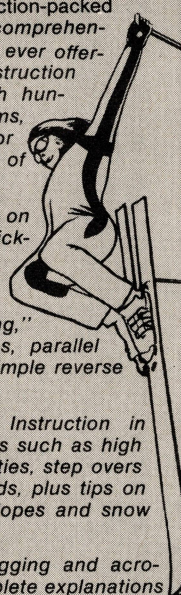
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NAUI Underwater Symposium & Film Review, Philadelphia, Pa. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, N.J. 08023)

April 28

NAUI Underwater Photo Seminar, Philadelphia, Pa. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, N.J. 08023)

May 4-5 (1st of 6 weekends)

NAUI Instructor Certification Course, Rockport, Mass. (Contact: NAUI North Atlantic Branch, Box 291, Back Bay Annex, Boston, Mass. 02117)

May 5-6

YMCA, Scuba Instructor Institute, Springfield Ohio. (Contact: Fred D. Crowner, 7459 Dixie Hwy. No. 3, Florence, Kentucky 41042)

May 7, 14, 21, 28

Professional Regulator Repair Technician Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago, Ill. 60632)

May 10, 24, 31

Underwater Photo Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago, Ill. 60632)

May 11

NAUI Diver Rescue Workshop, New York. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, New Jersey 08032)

May 11-12

NAUI Instructor Qualification Program, Santa Ana, Calif. (Contact: NAUI Pacific Branch, 867 Basin St., San Pedro, California 90732)

May 13

Commercial Diving Class. (Contact: Divers Institute of Technology, Dept. S, Box 70312, Seattle, Wash. 98107)

May 18-19

YMCA, Scuba Instructor Institute, Muskingum, Ohio. (Contact: Dr. John Simpson, 33112 Lake Rd., Avon Lake, Ohio 44012)

May 18-25

NAUI Instructor Certification Course, Baton Rouge, La. (Contact: NAUI Southwest Branch, 2120 Peckham St., Houston, Texas 77019)

May 18-26

NAUI Instructor Certification Course, (French language) St. Jean, Quebec, Canada. (Contact: NAUI Canada, 10 Monet Ave., Etobicoke, Ont., Canada)

May 21

PADI Master Diver Course, Chicago. (Contact: Berry, 4889 S. Archer Ave., Chicago, Ill. 60632)

May 25-27

7th Annual Seminar on Cave Diving, Jacksonville, Fla. (Contact: National Association of Cave Diving, 2900 N.W. 29th Ave., Gainesville, Fla. 32601)

May 28

NAUI Advanced Diving Course. (7 weekends). Washington, D.C. area. (Contact: LCDR B. J. McGee, USN, 4206 Plaza, Fairfax, Va. 22030)



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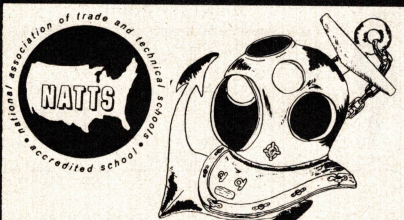
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NAUI Instructor Training Course, State
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lantic Branch, P.O. Drawer C, Deep-
water, N.J. 08023)

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NAUI Instructor Training Course, San
Diego, Calif. (Contact: NAUI Pacific
Branch, 867 Basin St., San Diego,
California 90732)

June

NAUI Instructor Training Course, Eur-
eka, Calif. (Contact: NAUI Pacific
Branch, 867 Basin St., San Pedro,
California 90732)

June

NAUI Divemaster Seminar, Victoria,
B.C., Canada. (Contact: NAUI Canada,
10 Monet Ave., Etobicoke, Ont., Can.)

June 2, 9, 16, 23, 30

Underwater Photo Course, Chicago.
(Contact: Berry, 4889 S. Archer Ave.,
Chicago, Ill. 60632)

June 5, 12, 19, 26

Professional Regulator Repair Tech-
nician Course, Chicago. (Contact:
Berry, 4889 S. Archer Ave., Chicago
Illinois 60632)

June 8, 22

PADI Master Dive Course, Chicago.
(Contact: Berry, 4889 S. Archer Ave.,
Chicago, Ill. 60632)

June 16-21

NASDS Clinic, Seattle, Wash. (Contact:
NASDS Educational Division, 1214 Rose-
crans, San Diego, Calif. 92106)

June 17

Commercial Diving Class. (Contact:
Divers Institute of Technology, Dept. S,
Box 70312, Seattle, Wash. 98107)

June 21-23

NAUI Divemaster Seminar, Tobermory,
Ont., Canada. (Contact: NAUI Canada,
10 Monet Ave., Etobicoke, Ont., Can.)

June 30

Rick Frehsee Underwater Photo Course,
Roatan, Honduras. (Contact: Kathy Tay-
lor, Island Reef Safaris, 34 Ground
Pine Rd., Wilton, Conn. 06897)

July

NAUI Industrial Orientation Course,
San Diego, Calif. (Contact: NAUI Hdqrs.
22809 Barton Rd., Colton, (Grand
Terrace), Ca. 92324)

July 7 & 14

Rick Frehsee Underwater Photo Course,
Roatan, Honduras. (Contact: Kathy Tay-
lor, Island Reef Safaris, 34 Ground
Pine Rd., Wilton, Conn. 06897)

July 8

Professional Diving Instructor Course,
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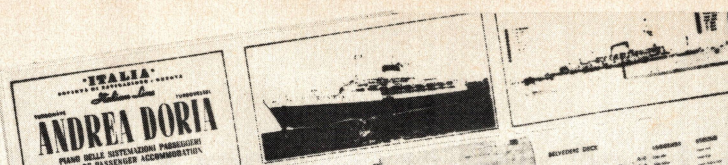
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- July 2-September 6
NASDS College, San Diego. (Contact: NASDS Educational Division, 1214 Rosecrans, San Diego, Calif. 92106)
- July 22
Commercial Diving Class. (Contact: Divers Institute of Technology, Dept. S, Box 70312, Seattle, Wash. 98107)
- July 27-August 3
NAUI Instructor Training Course, Peterborough, Ont., Canada. (Contact: NAUI Canada, 10 Monet Ave., Etobicoke, Ont., Canada)
- August 3-10
NAUI Instructor Training Course, Houston, Texas. (Contact: NAUI Southwest Branch, 2120 Peckham St., Houston, Texas 77019)
- August 5-13
NAUI Extended Bio-Marine Exploration Seminar, San Diego, Calif. (Contact: NAUI Pacific Branch, 867 Basin St., San Pedro, Calif. 90732)
- August 10-18
NAUI Instructor Training Course, College Park, Md. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, N.J. 08023)
- August 17-24
NAUI Instructor Training Course, Chicago, Ill. (Contact: NAUI Central Branch, Box 14156, University Station, Minneapolis, Minn. 55414)
- August 17-25
NAUI Instructor Training Course, Hempstead, N.Y. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, New Jersey 08023)
- August 19
Commercial Diving Class. (Contact: Divers Institute of Technology, Dept. S, Box 70312, Seattle, Wash. 98107)
- August 24-31
NAUI Instructor Training Course, Stanford University, Calif. (Contact: NAUI Pacific Branch, 867 Basin St., San Pedro, Calif. 90732)
- August 24-25
NAUI High Altitude/Fresh Water Workshop, Lake Tahoe, Nev. (Contact: NAUI Pacific Branch, 867 Basin St., San Pedro, Calif. 90732)
- August 24-September 1
NAUI Instructor Training Course, Vancouver, B.C., Canada. (Contact: NAUI Canada, 10 Monet St., Etobicoke, Ont., Canada)
- August 26-30
NAUI Basic Bio-Marine Exploration Seminar, San Diego, Calif. (Contact: NAUI Pacific Branch, 867 Basin St., San Pedro, Calif. 90732)
- August 31-September 8
NAUI Instructor Training Course, Veracruz, Mexico. (Contact: NAUI Pacific Branch, 867 Basin St., San Pedro, California 90732)
- September
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NASDS Clinic, San Diego. (Contact: NASDS Educational Division, 1214 Rosecrans, San Diego, Calif. 92106)

September 21

NAUI Diver Seminar. (Contact: NAUI Atlantic Branch, Box 291, Back Bay Annex, Boston, Mass. 02117)

September 21

NAUI Underwater Film Review, Boston, Mass. (Contact: NAUI North Atlantic Branch, Box 291, Back Bay Annex, Boston, Mass. 02117)

September 23

Commercial Diving Class. (Contact: Divers Institute of Technology, Dept. S, Box 70312, Seattle, Wash. 98107)

September 30-December 6

NASDS College, San Diego. (Contact: NASDS Educational Division, 1214 Rosecrans, San Diego, Calif. 92106)

October 3

NAUI/NDA General Membership meeting, San Diego, Calif. (Contact: NAUI Hdqrs., 22809 Barton Rd., Colton (Grand Terrace), Calif. 92324)

October 4-6

NAUI 6th International Conference on Underwater Education, San Diego, Calif. (Contact: NAUI Hdqrs., 22809 Barton Rd., Colton (Grand Terrace), Calif.)

October 7

Professional Diving Instructor Course, Monterey, Calif. (Contact: Ed Brawley, 598 Foam St., Monterey, Calif. 93940)

October 19

YMCA Instructor Institute, New York Metropolitan area. (Contact: Walt Hornberger, 7161 Spire Falls Rd., Ganesvoort, N.Y. 12831)

October 19

NAUI Underwater Symposium & Film Review, New York, N.Y. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, N.J. 08023)

October 28

Commercial Diving Class. (Contact: Divers Institute of Technology, Dept. S, Box 70312, Seattle, Wash. 98107)

November

NAUI Underwater Symposium & Film Review, Philadelphia, Pa. (Contact: NAUI Mid-Atlantic Branch, P.O. Drawer C, Deepwater, N.J. 08023)

November 16-18

NAUI Instructor Qualification Program, Montreal, Que., Canada. (Contact: NAUI Canada, 10 Monet Ave., Etobicoke, Ont., Canada)

November 25

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maximum	on bottom	surface	out
	bottom	bottom	bottom
Pressure			
start			
finish			
Remarks/Observations _____			
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November 30-December 7

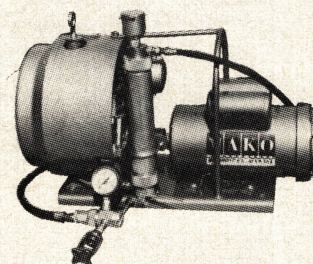
NAUI Instructor Training Course, San Diego, Calif. (Contact: NAUI Pacific Branch, 867 Basin St., San Pedro, California 90732)

December 15-20

NASDS Clinic, Florida. (Contact: NASDS Educational Division, 1214 Rosecrans, San Diego, Calif. 92106)

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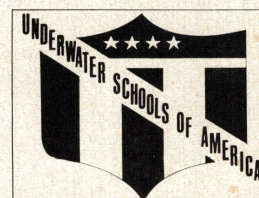
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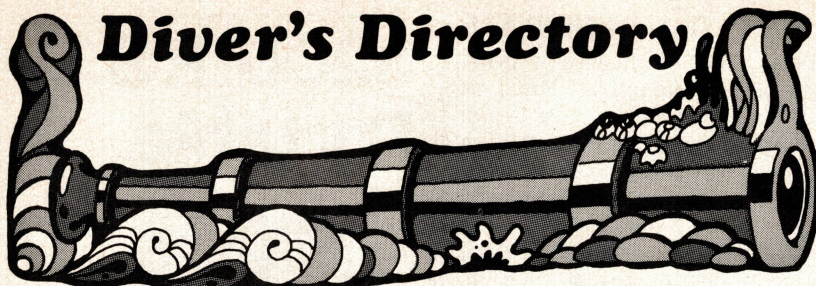
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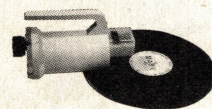
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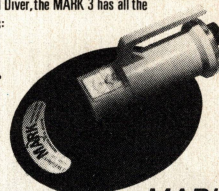
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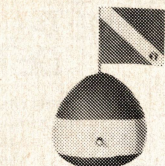
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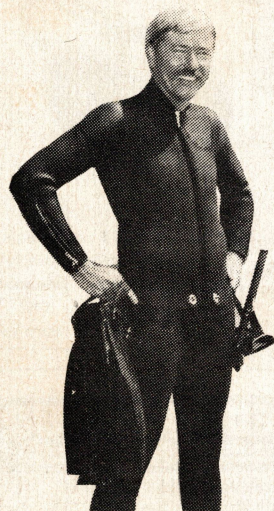
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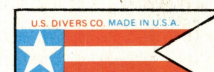
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